

Objective: Review of multiplication of decimals.

Practice

1. Multiply.

Example: 8×0.612

$$\begin{array}{r}
 \textcircled{4}\textcircled{1} \\
 0.612 \longrightarrow 3 \text{ decimal points} \\
 \times \quad 8 \longrightarrow + 0 \text{ decimal points} \\
 \hline
 4.896 \quad \quad \quad 3 \text{ decimal points}
 \end{array}$$

a. 5×2.71

d. 0.112×8

b. 3×4.62

e. 2.369×2.06

c. 2.5×3.51

2. Syed walked 112 steps. Each step is 0.7 meter. How many meters has he walked?

3. A football team bought 4.25 liter mango juice for the end of the match. If each liter of juice costs Afg 300.27, find the total price of juice.

4. The speed of car is 127.45 km per hour. Find the distance the car travels in 4.5 hours.

Objective: Multiplication of decimals.

Solve

1. Multiply.

a. 17.5×0.15

d. 932.42×0.17

b. 19.32×3

e. 0.275×8

c. 754.32×0.06

f. 0.35×2.4

2. A contractor is building a house. The following table shows what is needed and the price of the item.

Calculate the total price and round off to the nearest hundredth.

No	Item	Quantity (kg)	Rate (Rs)	Total
1	Plastic	3.225	70.217	
2	Cement	219.405	13.219	
3	Lime	87.5	12.25	
4	Paint	1.225	175.05	
Total				

Objective: Divide decimals with whole numbers.

Study

To divide a decimal number by a whole number, the quotient will have the same number of decimal places as the dividend. Look at the examples.

$$18.6 \quad 3$$

$$\begin{array}{r} 6.2 \\ 3 \overline{) 18.6} \\ \underline{- 18} \\ 6 \\ \underline{- 6} \\ 0 \end{array}$$

- Divide the whole number
- Place the decimal point
- Divide the tenths

$$18.66 \quad 3$$

$$\begin{array}{r} 6.22 \\ 3 \overline{) 18.66} \\ \underline{- 18} \\ 6 \\ \underline{- 6} \\ 6 \\ \underline{- 6} \\ 0 \end{array}$$

- Divide the whole number
- Place the decimal point
- Divide the tenths
- Divide the hundredths

Remember to keep the decimal points aligned when you do division.

Practice

1. Divide.

Example: $6.415 \quad 5$

$$\begin{array}{r} 1.283 \\ 5 \overline{) 6.415} \\ \underline{- 5} \\ 14 \\ \underline{- 10} \\ 41 \\ \underline{- 40} \\ 15 \\ \underline{- 15} \\ 0 \end{array}$$

a. $20.16 \quad 4$

b. $18.25 \div 5$

d. $50.25 \div 3$

c. $288.24 \div 8$

e. $165.55 \div 43$

2. Solve.

Example: How many 3s are there in 4.5?

$$\begin{array}{r} 1.5 \\ 3 \overline{) 4.5} \\ \underline{- 3} \\ 15 \\ \underline{- 15} \\ 0 \end{array}$$

There are 1.5 threes in 4.5

a. How many 9s are in 5.166?

b. How many 2s are in 72.238?

c. How many 26s are there in 13.104?

3. Latif has to distribute 28.14 kg flour between 7 persons. How many kg of flour does each person receive?

4. Halima bought 3 pens for Afg 421.075 and 5 notebooks for Afg 817.225. Find the price of each notebook and each pen.

5. A carpenter makes 5 equal pieces from a wood bar 23.75 meters long. What is the length of each piece?

Objective: Divide decimals by tenths.

Study

$$0.12 \div 0.6$$

To divide a decimal by tenths, we move the decimal point to make the divisor into a whole number. We must then move the decimal point the same number of places to the right in the dividend.

$$0.6 \overline{)0.12} = 6 \overline{)1.2}$$

$$\begin{array}{r} 0.2 \\ 6 \overline{)1.2} \\ \underline{-0.2} \\ 12 \\ \underline{-12} \\ 0 \end{array}$$

Practice

1. Divide.

Example: $0.576 \div 0.8$

$$0.8 \overline{)0.576} = 8 \overline{)5.76}$$

$$\begin{array}{r} 0.72 \\ 8 \overline{)5.76} \\ \underline{-0.8} \\ 57 \\ \underline{-56} \\ 16 \\ \underline{-16} \\ 0 \end{array}$$

a. $12.92 \div 0.4$

c. $0.066 \div 0.6$

b. $0.224 \div 2.2$

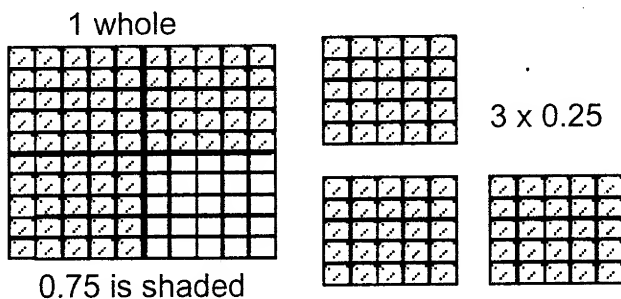
d. $0.531 \div 1.4$

2. A tailor wants to make some handkerchiefs from a cloth of 25.5 meter long. If he makes each handkerchiefs from 0.5 meter cloth. How many handkerchiefs can he make from this cloth?
3. A cup has a capacity of 0.5 liter. How many cups can be filled from 4.75 liter of orange juice?

Objective: Divide the decimals by hundredths.

Study

Look at the figure.



$$0.75 \div 0.25 = 3$$

$0.66 \div 0.06$ To divide a decimal by hundredths, we move the decimal point to make the divisor into a whole number. Then we move the decimal point in the dividend the same number of places to the right.

$$0.06 \overline{) 0.66} = 6 \overline{) 66}$$

$$\begin{array}{r} 11 \\ 6 \overline{) 66} \\ \underline{- 6} \\ 6 \\ \underline{- 6} \\ 0 \end{array}$$

Practice

1. Divide.

Example: $0.48 \div 0.12$

$$0.12 \overline{) 0.48} = 12 \overline{) 48} \quad \begin{array}{r} 4 \\ 12 \overline{) 48} \\ \underline{- 48} \\ 0 \end{array}$$

a. $0.36 \div 0.18$

d. $2.08 \div 1.04$

b. $0.75 \div 0.15$

e. $10.15 \div 1.45$

c. $1.25 \div 0.25$

2. Divide.

Example: How many 2.12 are there in 6.36?

$$2.12 \overline{) 6.36} = 212 \overline{) 636} \quad \begin{array}{r} 3 \\ 212 \overline{) 636} \\ - 636 \\ \hline 0 \end{array}$$

a. How many 1.13 are there in 4.52?

b. How many 3.14 are there in 12.56?

3. 16.25 kg of sugar is packed into plastic bags, each containing 0.25kg of sugar. How many bags will be needed?

4. Nader finds 12.25 kg of flour in the larder. To bake one bread, he uses 1.75 kg of flour. How many loaves of bread can he bake?

Objective: Divide decimals thousandths.

Study

To divide a decimal by thousandths, we move the decimal point in the to make a whole number. Then we move the decimal point the same number of places to the right in the dividend.

$$0.735 \div 0.245 = 245 \overline{) 735}$$

$$\begin{array}{r} 3 \\ 245 \overline{) 735} \\ - 735 \\ \hline 0 \end{array}$$

Practice

1. Divide.

$$\text{Example: } 8.442 \div 0.002 = 2 \overline{) 8442}$$

$$\begin{array}{r} 4221 \\ 2 \overline{) 8442} \\ - 8 \downarrow \downarrow \downarrow \\ \hline 4 \downarrow \downarrow \downarrow \\ - 4 \downarrow \downarrow \downarrow \\ \hline 4 \downarrow \downarrow \downarrow \\ - 4 \downarrow \downarrow \downarrow \\ \hline 2 \\ - 2 \\ \hline 0 \end{array}$$

a. $60.18 \div 2.016$

b. $3.303 \div 0.367$

c. $0.52 \div 0.013$

d. $7.75 \div 0.155$

2. The total cost of an airline ticket is \$ 412.125. \$ 11539.50 spent during the year on buying these airline tickets. How many tickets were bought?
3. A farmer bought 2500 kg of chemical fertilizer. He puts 41.752 kg of this fertilizer to one jrib of his farm. How many jrib does he have?

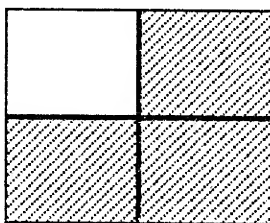
Objective: Reviewing changing a common fraction to a decimal fraction, and vice versa.

Study

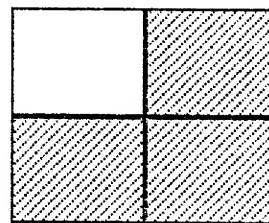
To change common fractions to decimal, divide the numerator by denominator. Look at the figures.

a. $\frac{3}{4}$

$$\begin{array}{r} 0.75 \\ 4 \overline{) 30} \\ \underline{- 28} \\ 20 \\ \underline{- 20} \\ 0 \end{array}$$



$$\frac{3}{4}$$



$$= \frac{3}{4}$$

b. $2 \frac{4}{5} = 2.80$

$$\begin{array}{r} 0.8 \\ 5 \overline{) 40} \\ \underline{- 40} \\ 0 \end{array}$$

Whole number is 2 and fraction is 4 by 5. Therefore add 0 to dividend and put a decimal in answer and continue to divide.

c. To change decimal fractions to common fractions, we write numbers in the tenths place with the denominator of 10, in the hundredths place with a denominator of 100 and in the thousandths place with a denominator of 1000.

$$0.75 = \frac{75}{100} = \frac{3}{4}$$

Practice

1. Change the follow common fractions to decimal fractions.

Example: $\frac{1}{2} = 0.5$

$$\begin{array}{r} 0.5 \\ 2 \overline{) 10} \\ \underline{- 10} \\ 0 \end{array}$$

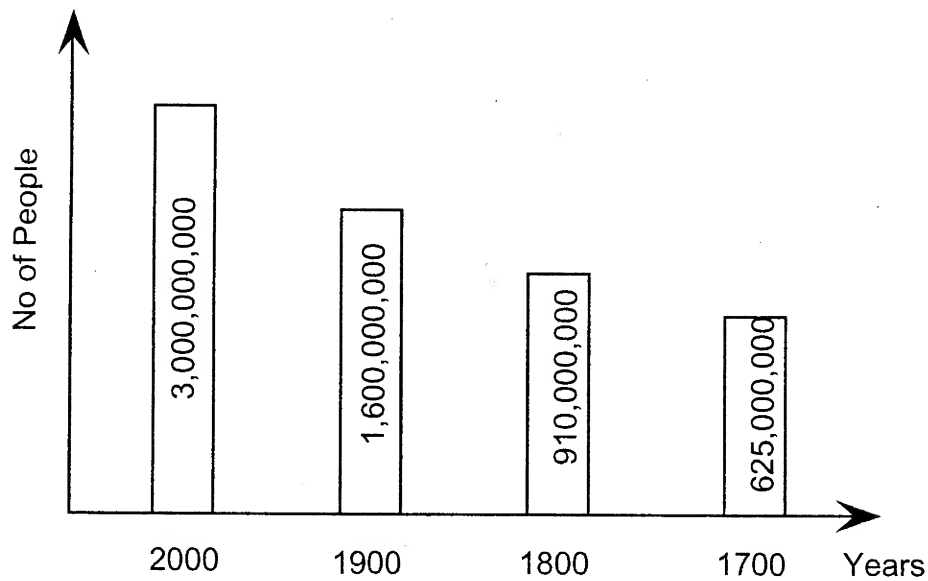
a. $\frac{2}{5}$

b. $\frac{3}{6}$

c. $1 \frac{3}{3}$

d. $\frac{1}{4}$

3. The graph shows the number of people living in the world in different centuries.



Example: What was estimated population of the world in 1700?

Six hundred and twenty five million

- What is the estimated population of the world in 2000? _____
- Has the world population increased in 2000 over 1800. How much? _____
- What was the world's population in 1900? _____

2. Change the following decimals to common fractions.

Example: $0.25 = \frac{\overset{1}{\cancel{5}}}{\cancel{25}} = \frac{1}{4}$

a. 0.45

c. 25.42

b. 8.5

d. 198.124

3. Change to decimals and round the answer to the nearest tenth.

Example: $\frac{1}{3}$

$$\begin{array}{r} 0.333 \\ 3 \overline{) 1.000} \\ \underline{- 9} \\ 10 \\ \underline{- 9} \\ 10 \\ \underline{- 9} \\ 1 \end{array}$$

The answer is = 0.333

After rounding off the answer = 0.3

a. $\frac{2}{7}$

c. $\frac{7}{9}$

b. $\frac{3}{11}$

d. $\frac{5}{6}$

Objective: Review of division and multiplication decimals.

Practice

1. Divide.

Example: $66.6 \div 1.2 = 55.5$

$$\begin{array}{r}
 55.5 \\
 1.2 \overline{) 66.6} \\
 \underline{- 60} \\
 66 \\
 \underline{- 60} \\
 6.0 \\
 \underline{- 6.0} \\
 0
 \end{array}$$

a. $0.725 \div 0.24$

d. $3.3 \div 2.5$

b. $0.65 \div 6.24$

e. $3.4 \div 10.8$

c. $12.4 \div 65.324$

f. $0.24 \div 5.24$

2. Multiply.

Example: 0.6×1.25

$$\begin{array}{r}
 1.25 \\
 \times 0.6 \\
 \hline
 0.750
 \end{array}$$

2 decimal points
+ 1 decimal point
3 decimal points

a. 2.34×3.23

c. 3.06×2.05

b. 43.2×4.06

d. 3.741×0.14

3. To make a bed net, Aslam bought 61.04 meter net. The cost of the whole net is Af 62542.125. Find the price of one meter of net.

Objective: Assessment of division of decimals.

Solve

1. Solve and find the correct answer.

- | | |
|-------------------------|----------|
| a. $7.25 \div 5 =$ | A. 10.4 |
| b. $6.096 \div 0.6 =$ | B. 14.5 |
| c. $8.320 \div 0.8 =$ | C. 1.45 |
| d. $0.725 \div 0.05 =$ | D. 50.03 |
| e. $32.096 \div 0.16 =$ | E. 10.16 |
| f. $75.045 \div 1.5 =$ | F. 200.6 |

2. Solve.

- | | |
|--------------------|---------------------|
| a. $5.93 \div 5.8$ | c. $0.782 \div 34$ |
| b. $3.73 \div 63$ | d. $9.752 \div 4.6$ |

3.

- How many 0.5s are there in 4.5?
- How many 3.5s are there in 1.05?
- How many 0.023s are there in 69.46?
- How many 0.25s are there in 6.25?

4. Bibi Zahra school's administration wants to buy text books for 100 students of the school. If the total cost of textbooks is Afs 36457.35, find the price of each textbook.

5. The table shows the total monthly salaries and the salary of each staff member in a school. Find out the number of staff in each category and complete the table.

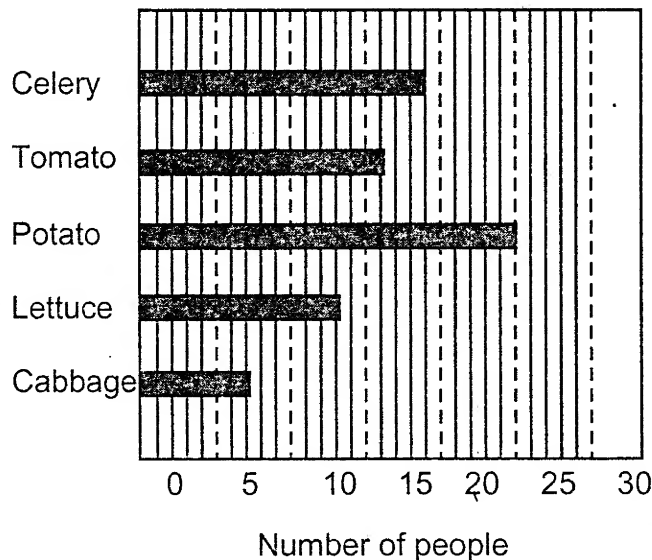
Position	No of staff	Salary of each Employee per Month (\$)	Total Salary \$
Teacher		175.55	2106.6
Head Master		180.65	361.3
Clerk		120.51	361.53
Guard		110.69	221.38
Total			

Objective: Calculating ratios.

Study

A ratio is a fraction that compares two numbers.

Look at the graph. It shows how many people like each vegetable.



Ratio of people liking cabbage to people liking lettuce. is $7 : 13$ or $\frac{7}{13}$

We say seven to thirteen.

Ratio of people's least favorite vegetable to most favorite is

to most favorite is $7 : 25$ or $\frac{7}{25}$

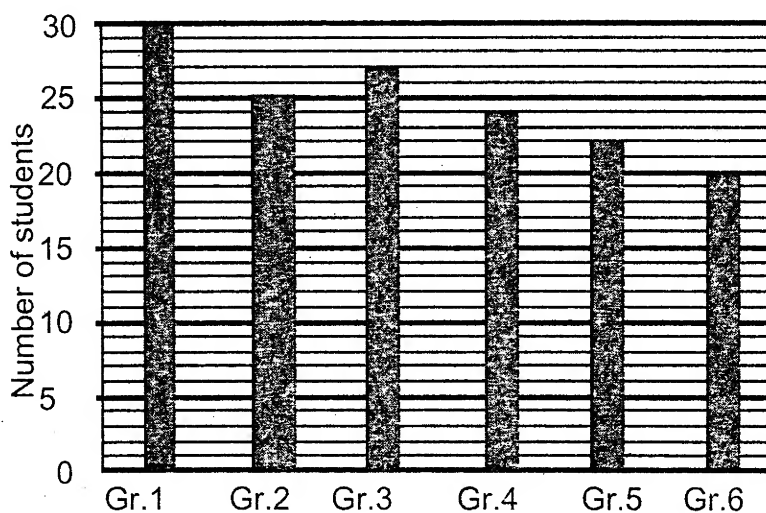
We say seven to twenty five.

Practice

1. Study the graph and write the following ratios.

Example: Ratio of students in grade 6 to grade 1

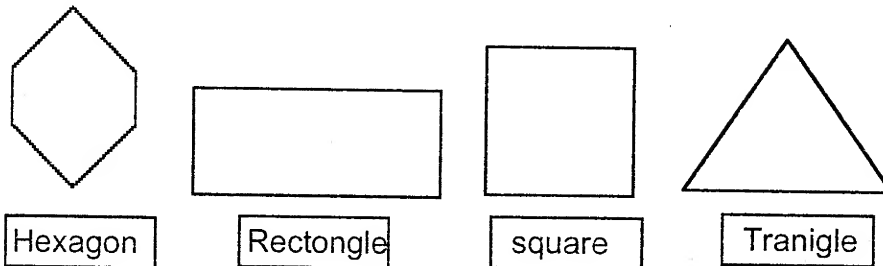
$$20 : 30 \text{ or } \frac{20}{30} \text{ or } \frac{2}{3} \text{ or } 2:3$$



b. Ratio of grade 5 students to grade 4

- c. Ratio of grade three students to all students in school.
- d. Ratio of grade 1 students to grade 2 students.
- e. Ratio of grade 4 students to grade 3 students.

2. Study the following shapes and write the answers of questions as ratios.



- a. Ratio of the number of triangle sides to the square sides

$$3 : 4 \text{ or } \frac{3}{4}$$

- b. Ratio of the number of triangle sides to the rectangle sides
- c. Ratio of the number of the square sides to the rectangle sides
- d. Ratio of the number of the triangle sides to the hexagon sides

3. The chart shows the age of Zahid's family members.

Name	Age
Zahid	20 Years
Zahid's Mother	40 //
Zahid's Father	50 //
Zainab	15 //
Naveed	24 //
Zahid's Grandmother	80 //
Zahid's Grandfather	90 //

Example: Write the ratio of Zahid's grandmother's age to his mother's age.

Solution: Ratio of Zahid's grandmother's age to Zahid's mother:

$$80 : 40 \text{ or } \frac{80}{40} = \frac{2}{1} \text{ or } 2:1$$

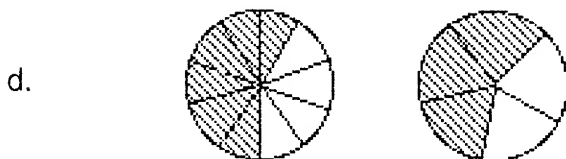
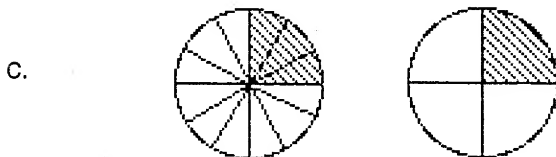
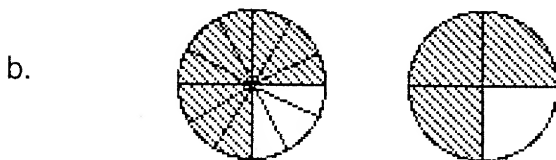
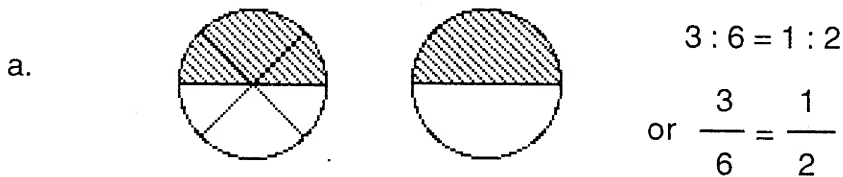
- a. Write the ratio of Naveed's age to his grandfather's age.
- b. Write the ratio of Zainab's age to her grandmother's age.
- c. Write the ratio of Zahid's mother's age to his father's age.
- d. Write the ratio of Zahid's age to Zainab's age.
- e. Write the ratio of Zainab's father's age to Zahid's mother's age.

Objective: Review of ratio.

Practice

1. Write the ratio of shaded parts as shown in example:

Example:



2. A school volleyball team won 4 matches and lost 3 matches. What is the ratio of lost games to won games for the team?

3. 2 liter of lemon juice was added 20 liter of water. What is the ratio of water to lemon juice?

Objective: Ratio applications.

Study

Study the example:

The ratio of Zahid's age to Naveed's age is 5 : 6. If Zahid's age is 20, find the age of Naveed.

$$\begin{array}{ccc} \text{Zahid : Naveed} & = & \frac{5}{6} \\ 20 & ? & \end{array}$$

We take the given number and divide it by the related ratio to find the value of one value of unit. Multiply the unit by the second ratio to find the answer.

$$\begin{array}{l} 20 \div 5 = 4 \\ 4 \times 6 = 24 \end{array} \quad \text{Naveed's age is 24 years.}$$

Practice

1. The table shows the ratio of people's ages.

<u>Name</u>	<u>Ratio of age</u>
Mohammad & Akram	3 : 5
Nahid & Zahra	4 : 3
Naveed & Zainab	8 : 5
Mary & Zahir	7 : 4
Nabil & Akmal	9 : 5
Ahmad & Zaman	8 : 3
Nadir & Maryam	8 : 7
Naeem & Nabi	9 : 3

Solve these problems.

Example: The ratio of Naveeds to Zainab's age is 8 : 5. Naveed's age is 24 years. Find the age of Zainab.

$$\text{Naveed : Zainab} = \frac{8}{5}$$

$$\begin{array}{l} 24 \div 8 = 3 \\ \text{Zainab's age} \quad 3 \times 5 = 15 \text{ years} \end{array}$$

- a. If Mohammad is 12 years old, find Akram's age.
- b. If Zahra's age is 15, what is Nahid's age?
- c. If Zainab's age is 15, what is Naveed's age?
- d. If Zahir's age is 24, find the age of Mary.
- e. If Nabil's age is 36, what is Akmal's age?
- f. If Zaman's age is 27, what is Ahmad's age?

Objective: Assess on place value from thousand up to trillion.

1. Write a numbers that has:

Example: 5 in the ten thousand place. 650678

- a. 6 in the hundred thousand place.
- b. 0 in the thousand place .
- c. 6 in the hundred place.
- d. 7 in the tenth place.
- e. 8 in the unit place.

2.

- a. 5 in the million place.
- b. 6 in the hundred thousand place.
- c. 0 in the ten thousand place.
- d. 7 in the thousand place.
- e. 0 in the left place.

3. Write these numbers in words.

- a. 2,500,000 _____
- b. 1,627,000 _____

4. Write the numbers.

- a. One million two hundred thousand and fifty six
- b. Eighty billion three hundred sixty one million and six hundred

5. Compare the following numbers using > and <.

- a. 850,427,221 ☐ 617,999,999
- b. 49,840,328 ☐ 72,639,958
- c. 98,486,243,000 ☐ 82,639,958

6. Write in expanded form.

- a. 561,478,000 _____
- b. 7,672,4 80,000 _____

7. Write the numbers in standard form.

- a. $4000000 + 800000 + 50000 + 4000 + 700 + 4$ _____
- b. $90000000 + 8000000 + 200000 + 40000 + 7000 + 9$ _____

Objective: Identify proportion.

Study

6 men build a wall in 2 days. How many men are needed to build the same wall in 4 days?

Think: If there are 4 daays to build the wall, do we need more or fewer men. We need fewer men:

Calculate:

$$6 \div 4 = 1.5$$

$$1.5 \times 2 = 3$$

If we have double the time we need half the men.

men	days
6	2
3	4

Practice

1. Example: From 2 kg of flour we can bake 20 loaves of bread. How many loaves can we bake from 5 kg flour?

Solution:

2 kg	20 loaves
5 kg	?

We can bake more loaves with 5 kg. We divide the bigger number 5kg by 2kg = 2.5. Then we multiply 20 by 2.5.

$$5 \text{ kg} \div 2 \text{ kg} = 2.5$$

$$20 \times 2.5 = 50 \text{ Loaves of bread.}$$

- a. 2 water containers are filled with 6 buckets of water. How many buckets of water need to fill 10 water container?

containers	buckets
2	6
10	?

- b. You can sweeten 2 cups of tea with 6 teaspoons of sugar. How many teaspoons of sugar do we need to sweeten 12 cups of tea?

cups	teaspoons
2	6
12	?

- c. If there are 3 plates of rice for 2 guests, how many plates of rice is needed for 20 guests?

plates	quests
3	2
?	20

- d. If a car runs 80 km in 2 hours, what distance does it run in 6 hours?

hours	distance
2	80 km
6	?

- e. If the cost of 20 kg tea is Rs 200, find the cost of 2 kg tea?

weight	cost
20 kg	200
2 kg	?

- f. If 10 person's salary totally is Afg 5000,000, find the total salary of 3 persons.

number of people	salary
10	5,000,000
3	?

Objective: Identify percentage.

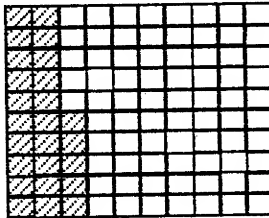
Study

Fractions can be written as percentages. Percentage means per hundred.

In three schools the following are the result of students' performance.

25 out of one hundred students passed.

In Malalai School



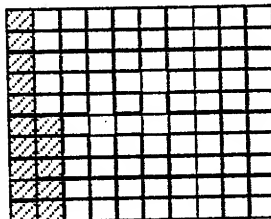
$$\frac{25}{100}$$

To change $\frac{25}{100}$ to a percentage we do the following.

$$\frac{25}{100} = 0.25 \times 100 = 25\%$$

25% of students passed

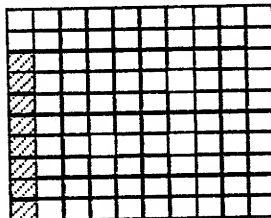
In Zarghoona School
Only 15 students out of
100 students passed.



$$\frac{15}{100} = 0.15 \times 100 = 15\%$$

15 % of students passed.

In Nazoo Ana school
only 8 students out of 100
students passed.



$$\frac{8}{100} = 0.08 \times 100 = 8\%$$

8 % of students passed.

Question: Which school has the lowest performance?

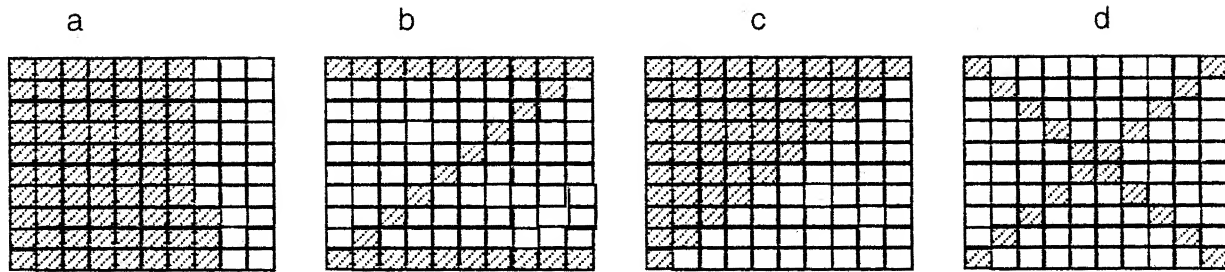
Answer: Nazoo Ana school, because only 8 students out of 100 students have passed

Question: Which school has the highest performance?

Answer: Malalai school has the highest performance, because 25 students out of 100 students have passed.

Practice

1. Write the percentage of the figure that is shaded.



$$\frac{73}{100} = 0.73 \times 100$$

$$= 73 \%$$

2. Write each ratio as a percent.

Example: $17 : 100 = \frac{17}{100} = 0.17 \times 100$
 $= 17 \%$

a. $\frac{15}{100}$

e. $\frac{87}{100}$

b. $65 : 100$

f. $3 : 100$

c. $\frac{7}{100}$

g. $\frac{1}{100}$

d. $43 : 100$

h. $\frac{75}{100}$

Objective: Apply percentage in problem solving

Study

In a class of 40 students, there are 20 girls what percent of the class students are girls?

We consider the part (20) as a fraction of the whole (40)

$$\frac{20}{40}$$

We divide the numerator by the demounator and then multiply by 100 to find the percentage.

$$\begin{array}{r} 0.5 \\ 40 \overline{) 20} \\ \underline{0} \\ 200 \\ \underline{200} \\ 0 \end{array}$$

$$0.5 \times 100 = 50\%$$

50% of the class are girls.

Practice

1. Change to percent.

Example: $\frac{7}{10} \times 100 = 70\%$

a. $\frac{4}{5}$

d. $\frac{8}{25}$

b. $\frac{13}{20}$

e. $\frac{19}{20}$

c. $\frac{47}{50}$

- There are 1800 people living in a village. 1,200 of them are involved in social work. Find the percentage of village persons who are involved in social work?
- A community in a village in Afghanistan planted 8,000 trees on a mountain. 7000 of the planted trees have grown. Find the percentage of trees that have grown.

Objective: Apply percentage in problem solving

Study

Study the example:

8 % of milk is butter. This means eight grams of a hundred grams. In 480 grams of milk how much butter is there?

We have to find 8% of 480 grams.

Milk	Butter
100	8
480	?

If 100 grams milk produces 8 grams butter, 480 grams of milk produces more butter. To calculate how much we first divide 480 by 100.

$$\begin{array}{r}
 4.8 \\
 100 \overline{) 480} \\
 \underline{- 400} \\
 800 \\
 \underline{- 800} \\
 0
 \end{array}$$

Then we multiply

8 by 4.8

$$8 \times 4.8 = 38.4\text{g}$$

Practice

1. Solve.
 - a. Find the profit on a capital of Afg 450,000 if the percent of profit on this capital is 80 %.
 - b. A merchant paid 10 % tax on his goods. If the total tax is 28,000 Afs, how much is the goods?
 - c. The number of pine trees in a forest is 2,500. This is the 15 % of all trees of the forest. Find the total number of trees in the forest.
 - d. A car salesman bought a car by Afg 250,000 and sold it at 6 % profit. How much is the profit?

Objective: Applying percentages to solve problems.

Study

Mahmooda wants to buy a new car costing \$ 45,000. The salesman says he will give her a 15 % reduction. How much will Mahmooda have to pay?

Solution:

<u>Cost</u>	<u>Reduction</u>
\$ 100	\$ 15
\$ 45,000	\$?

In \$ 100 she gets a reduction of \$ 15.

In \$ 45,000 she gets more reduction.

$$\begin{array}{r} 450 \\ 100 \overline{) 45000} \\ \underline{- 400} \\ 500 \end{array}$$

$$450 \times 15 = 6750$$

$$\text{Total reduction} = \$ 6750$$

To find the cost after reduction we subtract the reduction from total cost

$$45,000 - 6750 = \$ 38,250$$

Mr. Faqir earn Afg 355,000 every month from his work as a computer operator. If his boss gives him 25 % increase in salary, how much will his salary become?

<u>Salary Afg</u>	<u>Increase Afg</u>
100 %	25 %
Afg 350,000	Afs ?

$$\text{Total increase} = \frac{350,000 \times 25}{100} = 87,500$$

To find his new salary we add the increase to his current salary.

$$350,000 + 87,500 = 437,500 \text{ Afg}$$

Practice

1. Solve.

Example: Mr. Halim's buys goods for Afg 54,000,000. He makes a profit of 20 % when sells them.

Find the profit?

Solution:

<u>Capital Afg</u>	<u>Profit Afg</u>
100	20
54,000,000	?

$$100 \overline{) 54,000,000}$$

$$54,000,000 \div 100 = 540,000$$

$$540,000 \times 20 = 10,800,000$$

$$\text{Profit} = 10,800,000 \text{ Afg}$$

2. Haris earns Afg 240,000 in a month from his work as photocopy operator. His manager gives him a 30 % increase. Find his monthly salary after the increase.
3. Zia wants to buy a TV costing Rs 4,500. The salesman will give him 20 % discount. How much he must pay?
4. Nilofar is a clerk in an office. Her salary was Rs 4,800 per month. But she is always late. Her director decreased her salary by 5 %. Find her salary after the decrease.
6. A merchant makes a profit of Afg 350,000 Afg on his investment of Afg 10,000,000. What percentage of the investment is his profit?

Objective: Review proportion & percent.

Study

A street light 2.5 meter tall makes a shadow 3.5 meter long. A nearby building has a shadow 140 meter long. How tall is the building?

<u>Hight</u>	<u>Shadow</u>
2.5	3.5
?	140m

Divide 140m by 3.5m

$$\begin{array}{r} 40 \\ 35 \overline{) 1400} \\ \underline{-140} \\ 00 \end{array}$$

Multiply 40 by 2.5 to find the height of the building.

$$40 \times 2.5 = 100$$

The building 100m high.

A shopkeeper makes 5000 Afg profit on 200,000 Afg of goods. What percentage of 200,000 Afg is the profit?

<u>Goods cost in Afs</u>	<u>Profit</u>
200,00	5000
100	?

Divide 200,000 by 100

$$200,000 \div 100 = 2000$$

Now divide 5000 by 2000

$$\begin{array}{r} 2.5 \\ 2000 \overline{) 5000} \\ \underline{-4000} \\ 1000.0 \end{array}$$

$$\text{Profit on 100 Afg} = 2.5$$

$$\text{Percentage profit} = 2.5\%$$

Practice

1. If 4 children need 8 mls of vaccine. Find how much vaccine must the BHU must provide to vaccinate 180 children?
2. A carpenter makes 2 cabinets in 3 days. How many cabinets can he make in 18 days?

3. Find the percentage of students who passed the exams in each school.

School	Enrollment	Passed students	% of passed student
Nahid	500	400	$\begin{array}{r} 0.8 \\ 500 \overline{) 400.0} \\ 0.8 \times 100 = 80\% \end{array}$
Maryam	800	600	
Aryana	800	700	
Nadera	950	775	
Ghazi	800	650	

4. Sarwar receives a 20% increase on his salary of Rs. 15,000 per month. What is his new salary?
5. Zarghona is buying fruit in the market. She spends 150,000 Afs. The shopkeeper gives her a discount of 10,000 Afs. What percentage is the discount?

8. Write the missing numbers.

a.

48538560

b.

6712536512

c.

62171900

9. Arrange in ascending order.

909949, 909400, 909999 _____

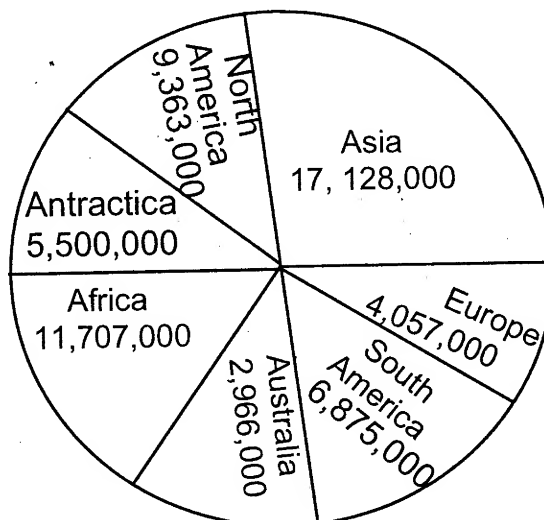
10. Arrange in decending order.

8305100, 8350300, 8305010 _____

11. Write the value of circled numbers.

- a. ③726621471000 _____
- b. 71⑧617323 _____
- c. 186⑨950 _____

12. The graph shows the area in square miles of each continent.



- a. Which continent has the largest area? _____
- b. Which continent has the smallest area? _____
- c. Which continent has an area around ten million square miles each?

- d. Which continent is a little more than half the size of Asia? _____

Objective: Assessment of Ratios and percentages.

Solve

1. Study the information in the table and answer the questions.

**Spin Kali School
age of teachers**

No	Name	Age
1	Zalmai	35 Years
2	Salima	40 Years
3	Sabir	45 Years
4	Lila	55 Years
5	Razia	30 Years
6	Fatima	25 Years

- Find the ratio between the ages of Zalmai and Salma.
 - Find the ratio between the ages of Sabir and laila.
 - Find the ratio between the ages of Fatima and Razia.
 - Find the ratio between the ages of Razia and Sabir.
 - Find the ratio between the ages of Laila and Zalmai.
2. There are two bags of rice. The ratio of rice in these two bags is 3 : 7. The rice in the first bag weighs 15 kg. Find the amount of rice in the second bag.
3. Study the information in the chart and answer the questions.

Name	Ratio of Weights
Sara & Qandi Gul	2 : 7
Zulikha & Yosuf	3 : 4
Parwin & Rukhshana	5 : 9

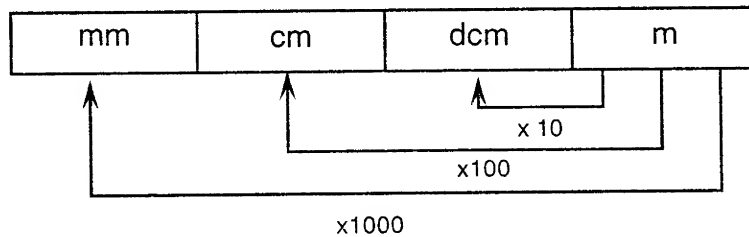
- a. If Sara's weight is 10 kg, find the weight of Qandi Gul.
 - b. If Yosuf's weight is 40 kg, find the weight of Zulikha.
 - c. If Rukhshana's weight is 90 kg, find the weight of Parwin.
4. Sahib Jan wants to buy a bus costing \$ 49,000. The salesman will give him 20 % discount. How much must Sahib Jan pay for the bus with discount?
 5. 4 people can finish a constitution job in 6 days. How many people can finish the same job in 3 days?
 6. The bank pays an interest of 10 %. Find how much interest will they pay for 10,000?
 7. If a merchant makes a profit of Afg 200,000 on a capital of Afg 4,000,000. What is the percentage of his profit.

Objective: Review units of meter.

Study

Units of the meter are dcm, cm, mm.

- a. To change large units of measurement to smaller units. We multiply by 10, 100, 1000 as indicated in the following diagram.



- b.
- $$1\text{m} = 10\text{dcm}$$
- $$1\text{m} = 100\text{cm}$$
- $$1\text{m} = 1000\text{mm}$$

Remember:

When we multiply $\times 10$ we add 1 zero on the right
 When we multiply $\times 100$ we add 2 zeros on the right
 When we multiply $\times 1000$ we add 3 zeros on the right

For example: Change 4 m to dcm, cm and mm

$$4\text{ m} = 4 \times 10\text{ dcm} = 40\text{ dcm}$$

$$4\text{ m} = 4 \times 100\text{ cm} = 400\text{ cm}$$

$$4\text{ m} = 4 \times 1000\text{ mm} = 4000\text{ mm}$$

Practice

1. Change.

Example: Change 8 m to dcm

$$1\text{m} = 10\text{ dcm}$$

$$8\text{ m} = 8 \times 10\text{ dcm} = 80\text{ dcm}$$

- a. Change 9 m to mm, dcm and cms.
- b. Change 2.5 m to as above.
- c. Change 5.75 m to mm, dcm and cm.

2. Complete the following table. Follow the example:

m	dcm	cm	mm
* 4.25	42.5	425	4250
6.5			
4			
$2\frac{1}{2}$			
$3\frac{1}{4}$			

3. The distance between two classrooms is 5m. What is the distance in dcm?

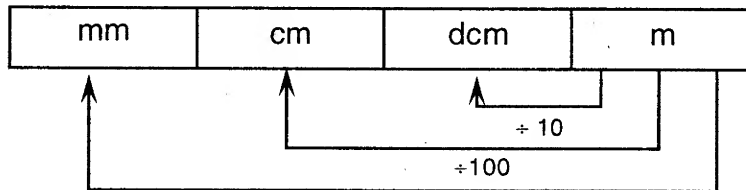
4. A room is 5 m long and 3.5 m wide. Change the length and width to cm.

5. Sharif's tall is 2.30 m tall. Find his height in dcm.

Objective: To change dcm, cm and mm to meter.

Study

- * To change small units of measurement to the large units of measurement, we divided by 10, 100, 1000... as indicated in the diagram



$$1 \text{ dcm} = 0.1 \text{ m} = \frac{1}{10} \text{ m} \quad \div 1000$$

$$1 \text{ cm} = 0.01 \text{ m} = \frac{1}{100} \text{ m}$$

$$1 \text{ mm} = 0.001 \text{ m} = \frac{1}{1000} \text{ m}$$

Remember:

When we divide $\div 10$ we move 1 digit from right to left.

When we divide $\div 100$ we move 2 digits from right to left.

When we divide $\div 1000$ we move 3 digits from right to left.

For example:

- a. Change 40 dcm to m.

$$40 \div 10 = 4 \text{ m}$$

- b. Change 500 cm to m

$$500 \div 100 = 5 \text{ m}$$

- c. Change 6500 mm to m

$$6500 \div 1000 = 6.5 \text{ m}$$

Practice

1. Match the equal measurements

9100 mm	0.28 m
65 dcm	1 m
10,000 mm	9.1 m
6.5 cm	6.5 m
10 dcm	10 m
91 cm	0.91 m
280 mm	0.065 m

2. A tree is 286 dcm high. Find the height of the tree in m.
3. My height is 1700 mm. Write my height in meters.
4. Sara's table cloth is 270 cm in length and 250 cm in width. Find the length and the width of her table cloth in meters.

Objective: Change large units of measurement to smaller units of measurement.

Study

Remember these facts to change bigger units of measurement to smaller units.
We multiply by 10, 100 or 1000

$$1 \text{ m} = 1 \times 10 = 10 \text{ dm}$$

$$1 \text{ dm} = 1 \times 10 = 10 \text{ cm}$$

$$1 \text{ cm} = 1 \times 10 = 10 \text{ mm}$$

$$1 \text{ m} = 1 \times 100 = 100 \text{ cm}$$

$$1 \text{ m} = 1 \times 1000 = 1000 \text{ mm}$$

$$1 \text{ dm} = 1 \times 10 = 100 \text{ mm}$$

Practice

1. Change the unit of measurement.

Example: Change 150 cm to mm

$$1 \text{ cm} = 10 \text{ mm}$$

$$150 \text{ cm} = 150 \times 10 = 1500 \text{ mm}$$

$$150 \text{ cm} = 1500 \text{ mm}$$

- a. Change 2.5 dcm to cm.
- b. Change 3.5 dcm to mm.
- c. Change 41 cm to mm.

2. Compare the measures by using $>$, $<$ and $=$.

Example: 1500 mm 150 cm

a. 35 dcm 4 m

f. 1000 mm 2 m

b. 600 cm 60 dcm

g. 150 mm 15 dcm

c. 50 dcm 200m

h. 750 mm 50 cm

d. 7 m 70 cm

i. 13 dcm 2 m

e. 650 cm 5 dm

3. Change the unit of measurement.

Example: Change 270 m to dcm

$$1 \text{ m} = 10 \text{ dcm}$$

$$270 \times 10 = 2700 \text{ dcm}$$

a. $250 \text{ dcm} = \boxed{} \text{ cm}$

b. $350 \text{ cm} = \boxed{} \text{ mm}$

c. $40 \text{ dcm} = \boxed{} \text{ cm}$

d. $5 \text{ m} = \boxed{} \text{ dm}$

e. $3000 \text{ mm} = \boxed{} \text{ m}$

4. Write the letter to show the correct answer.

Example: $320 \text{ cm} = \boxed{\text{a}}$

a. $\boxed{32 \text{ dm}}$

b. $\boxed{12 \text{ m}}$

c. $\boxed{100\text{mm}}$

A. $150 \text{ dcm} = \boxed{}$

a. $\boxed{15 \text{ cm}}$

b. $\boxed{1500 \text{ mm}}$

c. $\boxed{15 \text{ m}}$

B. $600 \text{ mm} = \boxed{}$

a. $\boxed{60 \text{ dcm}}$

b. $\boxed{6 \text{ cm}}$

c. $\boxed{6 \text{ m}}$

C. $25 \text{ m} = \boxed{}$

a. $\boxed{250 \text{ dcm}}$

b. $\boxed{250 \text{ cm}}$

c. $\boxed{2500 \text{ mm}}$

D. $85 \text{ dcm} = \boxed{}$

a. $\boxed{85 \text{ m}}$

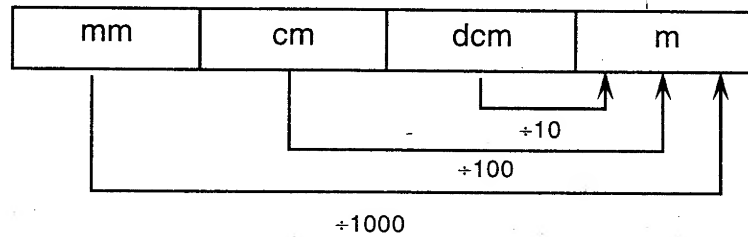
b. $\boxed{850 \text{ cm}}$

c. $\boxed{850 \text{ cm}}$

Objective: Change small units to bigger units of measurement.

Study

To change smaller units of measurement to bigger units of measurement. We divide by 10, 100, 1000... or by 10 as indicated in the diagram



$$1\text{dcm} = \frac{1}{10} \text{ m}$$

$$1\text{cm} = \frac{1}{100} \text{ m}$$

$$1\text{mm} = \frac{1}{1000} \text{ m}$$

Remember: When we divide $\div 10$ we move 1 digit from right to left.
 When we divide $\div 100$ we move 2 digit from right to left.
 When we divide $\div 1000$ we move 3 digit from right to left.

- For example:
- Change 40 dcm to m
 $40 \div 10 = 4\text{m}$
 - Change 500 cm to m
 $500 \div 100 = 5\text{m}$
 - Change 6500 mm to m
 $6500 \div 1000 = 6.5\text{m}$

Practice

1. Change the unit of measurement.

Example: 20 dcm to m.
10 dcm make on meter
 $20 \text{ dcm} \div 10 = 2 \text{ m}$

- a. 300 cm to dcm.
- b. 180 mm to dcm.
- c. 2000 mm to cm.
- d. 500 cm to m.
- e. 255 cm to m.
- f. 2550 mm to dcm.

2. Compare the numbers with $>$, $<$ or $=$.

- a. 25 dcm ☒ 2.5 m
- b. 220 cm ☐ 2.2 m
- c. 480 mm ☐ 50 cm
- d. 86 cm ☐ 860 dcm
- e. 6.5 dcm ☐ 0.65 m
- f. 780 cm ☐ 78 dcm
- g. 86 cm ☐ 0.086 m

3. Salma's cupboard is 200 cm high and 0.75 m wide. Find the measures in dm.

4. The mirror of bathroom is 6 dcm high. Change this height to meters.

Objective: Add the whole numbers up to trillions.

Study

To add large numbers take care to keep numbers in the correct columns. Align together the ones the tens, the hundreds, the thousands up to trillions and then add as follows:

			①	①	①	①	①		①	
				4	6	5	4	8	3	1
			4	8	5	0	6	2	5	9
	+	9	2	5	7	8	1	0	0	0
			9	7	8	9	4	2	0	9
										0

Practice

1. Add.

Example:

				①	
			5	4	7
			8		
	+	2	1	2	5
		7	6	0	3

a. $14565 + 92128 = 5781$

b. $512899 + 25405 =$

c. $5621863 + 227901 = 25400204$

d. $6274100025 + 85461718 =$

2. Add.

- a. $3564121 + 2478365$
- b. $18,485,169 + 232,104,659$
- c. $50,016,543 + 1,785,345,670$

3. Write the number which is:

Example: 40,000 more than 3,487,103 3,527,103

- a. 30,000 more than 1,297,456 _____
- b. 250,000 more than 14,320,187 _____
- c. 5,400,000 more than 20,045,624 _____

4. Solve.

Jamil had gone to Japan for trading. He spent Afg. 22,000,000,000 on cloths, 526,000,000,000 Afg. for purchasing of electronic equipments and Afg. 4,25,000 on motor spare parts. Now you write the sum of the money that Jamil has spent.

Objective: Revise units of measurement from bigger to smaller and smaller to bigger.

1. Change the unit of measurement.

Example: 2 cm to mm

$$1 \text{ cm} = 10 \text{ mm}$$

$$2 \times 10 = 20 \text{ mm}$$

a. 5 cm to mm.

b. 8.5 m to dcm.

c. 4 dcm to cm.

d. 1.2 cm to mm.

e. 10.25 m to cm.

f. 0.6 dcm to mm.

2. Match the measurements.

2500 mm

250 mm

750 cm

3600 cm

36 m

75 dcm

7500 mm

2.5 m

25 cm

7.5 m

0.36 m ————— 36 cm

3. Fill in the blanks in the following table.

m	dcm	cm	mm
	2.5		250
		40	
10.5			2256
	617		

4. The length of a room is 12.5 m. Find the length of the room in dcm.

5. The door of a library is 20 dcm high. What is the height of the door in mm?

Objective: Assessment of measurement.

1. Change these units of measurement.

a. 21 dcm = m

e. mm = 7.89 cm

b. 1025 mm = cm

f. dcm = 7000 m

c. 6 cm = mm

g. m = 6.25 cm

d. 812 cm = cm

h. mm = 912 dcm

2. The height of a box is 25 cm, length is 40 cm and width of it is 30 cm. Write the dimension of this box in meters.

3. Masjidi's house is 25.5 m far from the play ground. Find this distance in millimeters.

4. Change the measures to complete the table.

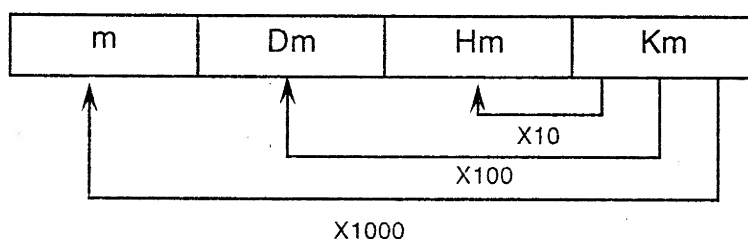
m	dcm	cm	mm
0.35			
0.6			
20.5			
3.150			
8.75			

Objective: Review units of measurement m - km.

Study

Remember:

To change large units of measurement to smaller units of measurement, we multiply by 10, 100 and 1000 as indicated in example. Or multiply by 10 for each unit.



1 Kilo meter = 1000 m

1 hecameter = 100 m

1 Decameter = 10 m

Practice

1. Change the measures to complete the table as shown in the example.

M	Dm	Hm	Km
5000	500	50	5 km
			6 km
			3 km
			4 km
			5 km
			0.5 km

2. Change the measure to complete the table and follow the example.

M	Dm	Hm
250	25	2.5
		14
		3.25
		0.04

3. Change the measure to complete the table follow the example.

M	Dm
160	16
	0.75
	0.22
	1.5

4. Change the units of measurement.

a. 5 Km to Hm

d. 0.5 Km to Dm

b. 12 Hm to Dm

e. 11.5 Hm to m

c. 22 Dm to m

f. 912 Dm to m

5. The distance between Zir Gul house and his school is 10 km. What is the distance in meters?

6. The perimeter of a playground is 1.5 km. What is the perimeter of this playground in Dm?

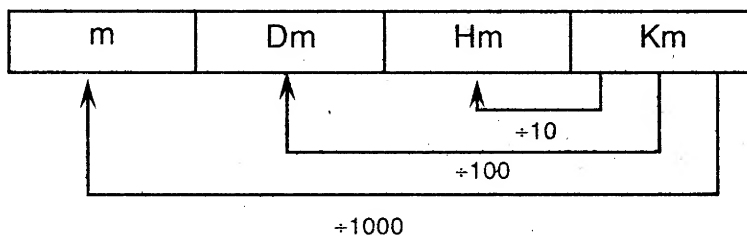
7. The length of the field is 7.5 Dm. What is the length in meters?

Objective: Change *m* to its multiples.

Study

Remember

To change small units of measurement to large units of measurements, we divide by 10, 100 and 1000 as indicated in the diagram below.



$$1 \text{ m} = \frac{1}{10} \text{ Dm} \quad 0.1 \text{ Dm} \quad \text{one tenth of a decameter}$$

$$1 \text{ Dm} = \frac{1}{10} \text{ Hm} \quad 0.1 \text{ Hm} \quad \text{one tenth of a km}$$

$$1 \text{ Hm} = \frac{1}{10} \text{ Km}$$

Practice

1. Change the measures to complete the table.

M	Dm
20	2
3.5	
24.25	
300.5	
42.4	

2. Follow the example to complete the table.

M	Dm	Hm
4500	450	45
2500		
2200		
3500		

3. Fill in the following table follow the example.

M	Dm	Hm	Km
5000	50	5	0.5
6000			
825			
412			
6730			

4. Change the units of measurement.

- 2.4 Hm to Km
- 30 Dm to Hm
- 4.5 m to Km
- 210 Dm to Hm
- 5000 m to Km

5. Solve.

- The length of a road is 280 Hm. Find the length of the road in kilometers.
- The distance between two villages is 2300 Dm. How many kilometers is it?
- Wali walks 2120 m to school on six days of the week. How many kilometers does he walk in one week? (Remember that he has to walk home too.)
- A bus journey is 2510 Dm. How far is the journey in Hm?

Objective: Review *m* to its parts and multiples.

Study the chart.

mm	cm	dcm	m	Dm	Hm	Km
0.001m	0.01 m	0.1 m	1 m	10 m	100m	1000m

Practice

1. Change the units of measurement to fill in the blanks. Follow the example.

a. dcm = 1 m

g. 5 hm = m

b. m = 3 Hm

h. 60 dm = dcm

c. cm = 50 m

i. 3.5 km = cm

d. mm = 10 m

j. 150,000 cm = dm

e. Km = 2,000,000 mm

k. 15,000 m = cm

f. Hm = 25,000 cm

l. 12,35 km = m

2. Change the measures to complete the table.

mm	cm	dcm	m	Dm	Hm	Km
		250				
			14			
	2,800					
				25		
						2
12,000,000						
	21,000					
					14	

3. Compare the following measures. Use $<$, $>$ or $=$.
Follow the example below:

25 Hm	<input type="text" value="<"/>	25,000,000 mm
3.5 km	<input type="text"/>	350,000 cm
12 m	<input type="text"/>	1.2 Hm
21,000 dcm	<input type="text"/>	21 Dm
212 dcm	<input type="text"/>	2.12 Hm
512 cm	<input type="text"/>	5.12 Dm
21 km	<input type="text"/>	2.1 Hm
621 Dm	<input type="text"/>	6.21 Hm
0.27 Dm	<input type="text"/>	27,000 mm
12,000 cm	<input type="text"/>	1.2 Hm

4. Find the measures.

Example: How many mteres are equal to 5 km ?

$$\text{Km} = 1000 \text{ m}$$

$$5 \text{ km} = 1000 \text{ m} \times 5 = 5000 \text{ m}$$

- How many Hm are equal to 25000 m?
- How many Dm are equal to 12 km?
- How many mm are equal to 3 Dm?
- How many cm are equal to 15 m?
- How many km are equal to 12,000 dcm?

Objective: Assessment of units of measurement .

1.. Fill in the blanks in the following table.

mm	cm	dcm	m	Dm	Hm	km
28,000						
13,000						
26,000						
230,000						
2,000,000						
8,000,000						
410,000						
1,200,000						

2. Compare the following two table use $<$, $>$ or $=$.

28 m 25,000,000 mm

22 Hm 1 km

4.5 km 450,000 Dm

13m 20 km

18 dcm 1500 mm

315 cm 200 cm

420 cm 15 Dm

22 km 22,000 m

4120 m 5200 mm

0.36 Dm 15 Hm

13,000 cm 600 Dm

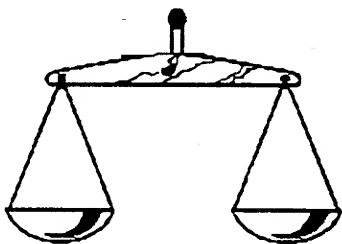
3. The height of a building is 25 Dm. Find the height in dcm.

4. The fence round of a play ground is 320 Dm long. Find the length to km.

5. The length of Musa s house is 1.5 Dm. Find the length in meters.

Objective: Changing units of weight.

Study



Changing units of weight is like changing units of length. Common weight measures are a kilogram, a gram and a milligram.

kilogram = kg gram = g milligram = mg

1 kg = 1000 g

1 g = 1000 mg

1 kg = 1,000,000 mg

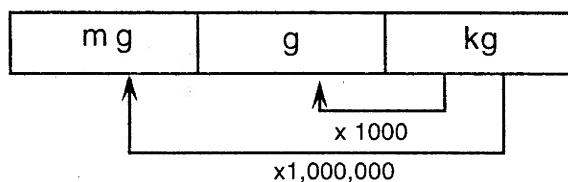
1 gram is one thousandth of a kilogram

1 g = 0.001 kg

1 milligram is one thousandth of a gram

1 mg = 0.001 g

To change bigger weights to smaller weights, we multiply.



Practice

- Follow the example and change the units to complete the table.

mg	g	kg
1000	1	0.001
		2
		0.5
		0.25

Objective: Subtract the whole numbers upto trillions.

Study

When doing subtraction sums with very big numbers, take care to keep numbers in the correct columns.

$$\begin{array}{r}
 \textcircled{8} \textcircled{14} \\
 \begin{array}{r}
 \cancel{8} \cancel{4} 3 5 9 \\
 - 2 5 2 4 3 \\
 \hline
 6 9 1 1 6
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 \textcircled{12} \textcircled{10} \\
 \begin{array}{r}
 6 9 9 2 \\
 2 \cancel{7} \cancel{0} \cancel{0} \cancel{8} \cancel{0} 2 9 \\
 - 1 0 8 1 6 4 2 0 \\
 \hline
 1 6 1 8 6 6 0 9
 \end{array}
 \end{array}$$

Practice

1. Subtract.

Example:

$$\begin{array}{r}
 \textcircled{5} \textcircled{14} \textcircled{2} \textcircled{12} \\
 \begin{array}{r}
 3 8 6 4 9 \cancel{8} \cancel{2} \\
 - 2 4 1 8 7 2 5 \\
 \hline
 1 4 4 6 2 0 7
 \end{array}
 \end{array}$$

a.
$$\begin{array}{r}
 27003029 \\
 - 9816420 \\
 \hline
 \end{array}$$

b.
$$\begin{array}{r}
 50030045 \\
 - 26987112 \\
 \hline
 \end{array}$$

c.
$$\begin{array}{r}
 80050000 \\
 - 7984162 \\
 \hline
 \end{array}$$

d.
$$\begin{array}{r}
 5223477163 \\
 - 2999864527 \\
 \hline
 \end{array}$$

2. Subtract.

Example: $85231569 - 16829293 = \underline{68402276}$

a. $56,241,650 - 21,864,137 = \underline{\hspace{2cm}}$

b. $320346290 - 210237245 = \underline{\hspace{2cm}}$

c. $714320430 - 193751680 = \underline{\hspace{2cm}}$

3. Write the number which is:

Example: 20,000 less than 49840320 = 49,820,320

a. 50,000 less than 8625689 = $\underline{\hspace{2cm}}$

b. 80,000 less than 1149400 = $\underline{\hspace{2cm}}$

c. 850,000 less than 7,593,400 = $\underline{\hspace{2cm}}$

4. There was 9,500,000 ton wheat in a store. 5,602,350 ton of this amount was consumed. Calculate the amount of wheat that is left in the store.

2. Find the equivalent measure.

$$250 \text{ g} = \boxed{} \text{ mg}$$

$$\boxed{} \text{ g} = 5.8 \text{ kg}$$

$$25 \text{ kg} = \boxed{} \text{ g}$$

$$\boxed{} \text{ g} = 4000 \text{ mg}$$

$$10 \text{ g} = \boxed{} \text{ mg}$$

3. Laila's gold ring weighs 3 g. Find the weight in milligrams.

4. Salma's platinum earrings weigh 25 g. Find the weight in milligrams.

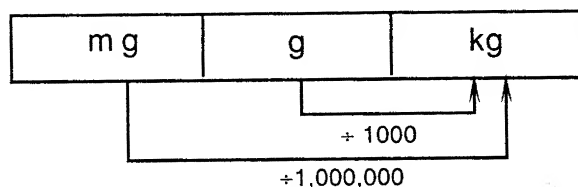
5. Zulikha's silver necklace weighs 0.25 kg. Find the weight in grams.

6. A diamond weighs 0.35 kg. Find the weight in milligrams.

Objective: Changing units of weight.

Study

To change smaller weight measures to bigger measures we divide.



Practice

1. Follow the example and change the units to complete the table.

mg	g	kg
2000	2	0.002
1450		
	250	
	7980	
20,000		

2. Find the equivalent measure.

$$1\,250\text{ g} = \boxed{}\text{ kg}$$

$$5000\text{ mg} = \boxed{}\text{ g}$$

$$\boxed{}\text{ kg} = 1,000,000\text{ mg}$$

$$\boxed{}\text{ kg} = 500\text{ g}$$

$$47.5\text{ g} = \boxed{}\text{ kg}$$

3. A pen weighs 20g. What is its weight in kilograms?

4. A book weighs 500g. What is its weight in kilograms?

5. A tablet weighs 250 mg. What is its weight in grams?

6. A bag of flour weighs 3000g. What is its weight in kilograms?

Objective: To introduce metric ton

Study

one metric ton = 1000 kg

one thousandth of a metric ton = 1 kg

0.001 metric ton = 1 kg

one metric ton = 1,000,000 g

one millionth of a metric ton = 1 g

We weigh very heavy things like vehicles and building materials in metric tons.

Practice

1. Follow the example and change the units to complete the table.

g	kg	metric tons
1000	1	0.001
		2
	0.5	

2. Find the equivalent measure.

$$0.5 \text{ metric tons} = \boxed{} \text{ kg}$$

$$7,50 \text{ kg} = \boxed{} \text{ metric tons}$$

$$\boxed{} \text{ kg} = 0.1 \text{ metric tons}$$

$$\boxed{} \text{ g} = 0.1 \text{ metric tons}$$

3. A bus weighs 6.5 metric tons. How many kilograms does the bus weigh?
4. A lorry load of cement weighs 1570 kg. What is the weight of cement in metric tons?
5. 100 sacks of wheat weigh 5,000 kg. What is the weight of wheat in metric tons?

Objective: Assessment of converting weight measures.

1. compare the measures. Use $>$, $<$ or $=$.

500 g 0.5 kg

495 g 0.495 kg

5 kg 50,000 g

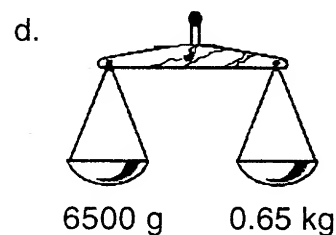
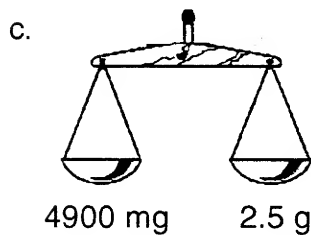
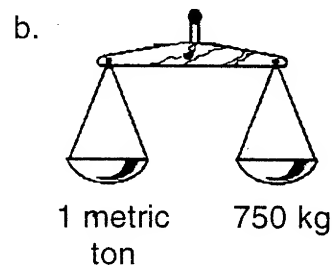
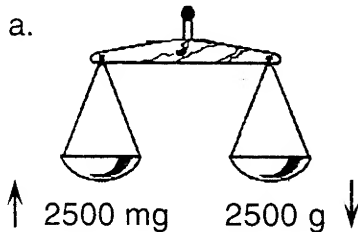
0.02 kg 2000 mg

3500 mg 35 g

2. Complete the sentence.

A metric ton is the same as kg and one million .

3. Draw arrows to show the way the balance will move.



4. Match the object with the unit you would use to measure it.

a truck full of gravel

kg

a banana

metric ton

a box of apples

gram

medicine tablets

milligram

a teaspoon of sugar

a person

a sheet of paper

Objective: To review capacity measurement units.

Study

Changing capacity units is like changing length and weight units.



mL	cL	dcL	L	DL	HL	KL
0.001	0.01	0.1	1	10 L	100 L	1000 L

The most common measures are litres and millilitres.

1 litre = 1000 ml

1 ml is one thousandth of a litre

1 litre = 10 dcl (10 decilitre)

1 dcl = one tenth of a litre

1 litre = 100 cl (100 centilitres)

1 cl = one hundredth of a litre

The big measure dL (decalitre), HL (hecalitre) and KL (kilolitre) are not common.

Practice

1. Change the units to complete the table.

mL	cL	dcL	L
2000	200	20	2
			2.5
			45
			0.5
			500
			1000
			0.25
			0.1

2. Complete the table. Follow the example.

L	DL	HL	KL
500	50	5	0,5
700			
	80		
		6	
			0.3

3. There is 3.5 liters of water in a bucket. Find the amount of water in dcL.
(Remember 1 litre = 10 dcL)

4. There are 15.5 l water in a water tank, find the amount of water in DL.
(Remember 10 litre = 1 DL)

5. There are 250 ml of water in a glass. Find the amount of water in litre.

6. There is 10 ml of medicine on a spoon. Find the amount of water in cL.

Objective: To review the time units.

Study

Millennium = 1000 years

Century = 100 years

Decade = 10 years

Year = 365 days

Every 4 years we add 1 day to the year and call it a leap year. A leap year has 366 days. We do this because a year is really 365 and a quarter days. (This is the amount of time it takes the Earth to go round the Sun.

year = 12 months

year = four seasons

month = 31 days: January, March, May, July, August, October, December

30 days: April, June, September, November.

28 days: February and 29 days in a leap year.

1 month = 4 weeks

1 day = 24 hours

1 hour = 60 minutes

1 minute = 60 seconds

Practice

1. Compare the time measures. Use > , < or =.

30 days

>

3 weeks

24 hours

2 days

3 months

6 weeks

45 minutes

125 second

12 days

421 hours

10 Months

1 year

38 days

2 weeks

year

Leap year

4 seasons

225 days

35 minutes

1 hour

2. Match the time measures.

Example:

2 century

9 months

4 months

2000 year

3 seasons

2 days

5 years

40 minutes

120 minutes

4 century

2400 seconds

Leap year

2 millenniums

40 years

3 months

120 days

48 hours

2 hours

4 weeks

one month

400 years

20 seasons

366 days

12 weeks

4 decade

200 years

3. Rahima is 24 years old. Find her age in hours.

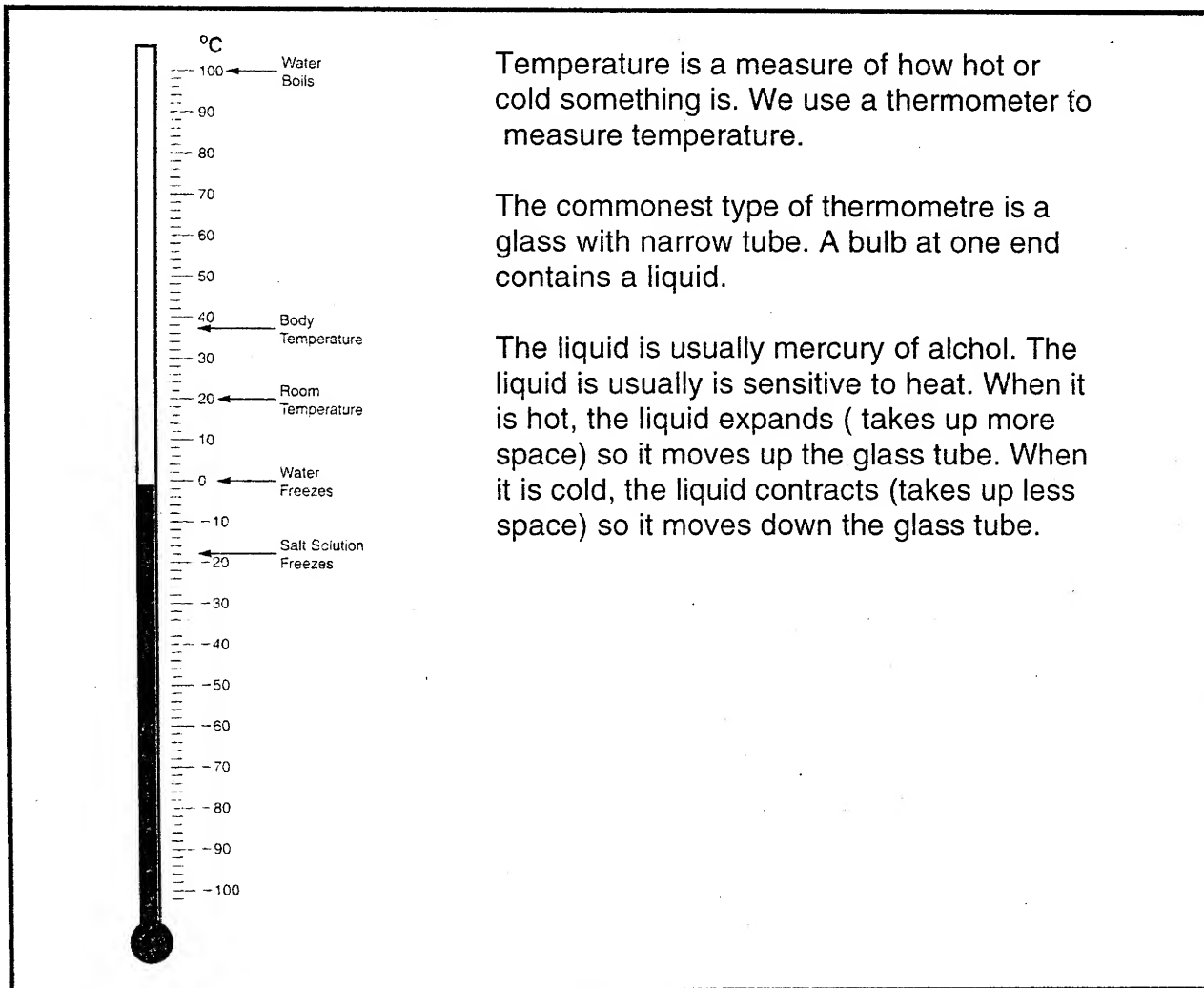
4. Islam has been spreading since 1379. For how many decades has Islam been spreading?

5. Hazrati Mohammad (PBUH) lived 63 years. Find his age in months.

6. Farid is 48 years old. Find his age in days.

Objective: To review temperature measure.

Study



Temperature is a measure of how hot or cold something is. We use a thermometer to measure temperature.

The commonest type of thermometer is a glass with narrow tube. A bulb at one end contains a liquid.

The liquid is usually mercury or alcohol. The liquid is usually sensitive to heat. When it is hot, the liquid expands (takes up more space) so it moves up the glass tube. When it is cold, the liquid contracts (takes up less space) so it moves down the glass tube.

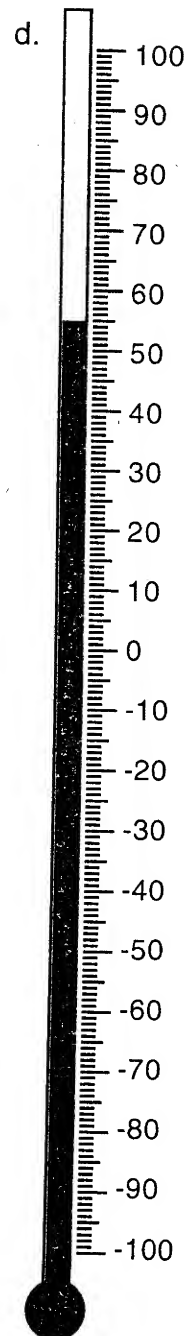
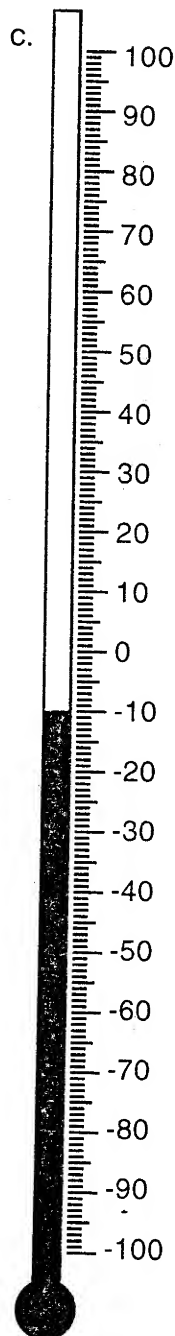
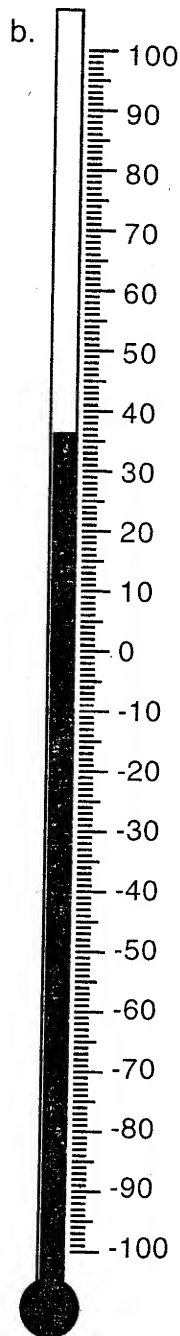
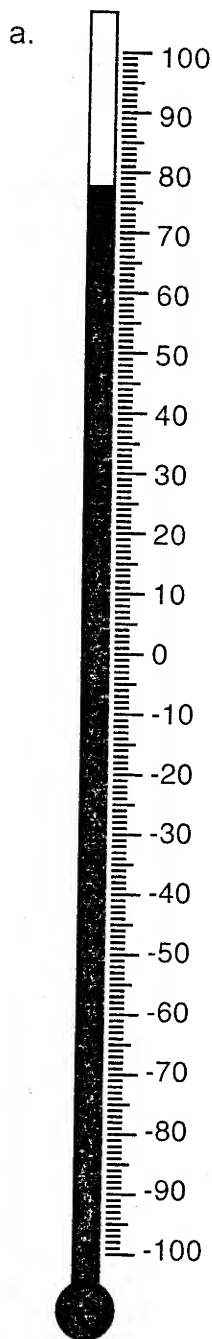
Practice

1. Write the temperature. Remember to write the units °C.

boiling water	100 °C
water freezes	_____
fresh weather	_____
cold weather	_____
hot weather	_____
human body temperature	_____
salt solution freezes	_____

* In cold countries, when it snows they spread salt on the streets. Study the thermometer and explain why.

2. In some countries, people put salt on the streets when it is cold and icy. Look at the picture of the thermometer and explain why.
3. Find the difference in temperature between
- water freezing and salt solution freezing
 - body temperature and room temperature
 - water freezing and water boiling
4. Write the temperature shown on the thermometer.



Class Six Subtraction and addition of the whole numbers 10

Objective: Subtract the whole numbers upto trillions.

Study

To add

Line up the numbers in the correct columns and add. Start with the ones and carry when necessary.

$$\begin{array}{r}
 \textcircled{1} \qquad \qquad \qquad \textcircled{1} \\
 7 \ 5 \ 6 \ 2 \ 0 \ 0 \ 0 \ 0 \ 5 \\
 + 7 \ 3 \ 8 \ 4 \ 0 \ 0 \ 5 \ 2 \ 7 \\
 \hline
 1 \ 4 \ 9 \ 4 \ 6 \ 0 \ 0 \ 5 \ 3 \ 2
 \end{array}$$

To subtract

Line up the numbers in the correct columns and subtract. Borrow when necessary.

$$\begin{array}{r}
 \textcircled{2} \ \textcircled{15} \ \textcircled{8} \ \textcircled{10} \\
 \cancel{3} \ \cancel{5} \ 8 \ 9 \ \cancel{0} \ 5 \\
 - 2 \ 7 \ 8 \ 4 \ 7 \ 2 \\
 \hline
 0 \ 8 \ 0 \ 4 \ 3 \ 3
 \end{array}$$

Practice

1. Solve the following questions.

Example:

$$\begin{array}{r}
 25,472 \\
 + \boxed{102,491} \\
 \hline
 127,963
 \end{array}$$

a.
$$\begin{array}{r}
 2,56,861 \\
 - \boxed{} \\
 \hline
 1,51,417
 \end{array}$$

b.
$$\begin{array}{r}
 \boxed{} \\
 + 25,045,000 \\
 \hline
 61,262,112
 \end{array}$$

c.
$$\begin{array}{r}
 \boxed{} \\
 - 55,600 \\
 \hline
 1,72,462
 \end{array}$$

2. The table shows how much people have saved.

- What is the total capital of three first listed persons?
- Calculate the total capital of the three lastlisted person?
- Calculate the total capital of men?
- Calculate the total capital of women?
- Calculate the difference between the amount of capital men and women have.

Name	Capital (Afg)
Nabi	2,75,000
Ali	3,467,000
Malalai	59,000,000
Fatima	70,000,000
Maryam	45,000,000
Hamid	1,250,671,000
Qadir	65,000,000

3. A local charity has a goal of raising Afg. 57,500,000 during its fund-raising drive. So far, the charity has collected Afg. 46,500,000. How much more money is needed to reach the goal? _____

Objective: Assessment of capacity, time and temperature measure.

Solve

1. Change the units and complete the two tables.

mL	cL	dcL	L
2500 mL			
			50
	5		
		75	

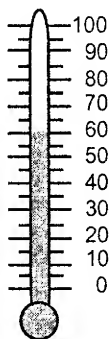
L	DL	HL	KL
0.5			
			4
	80		
		67	

- A bucket holds 13.5 l. How many 750 ml bottles can you fill from the bucket?
- A glass holds 300 ml of juice. What is the amount of juice in litres?
- A petrol tank holds 50 kl of fuel. During one day, 1596 l of fuel are used from the tank. How many kl of fuel remain in the tank.
- Match the time measures.

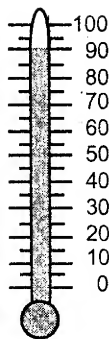
30 years 4 weeks 300 years 6600 seconds 4500 minutes 30 days 4 millenniums 12 months 2 seasons leap years 5 century	75 hours 3 century month year 6 months month 110 minutes 366 days 500 years 4,000 years 3 decades
---	---

6. What is the temperature of boiling water?
7. What is the temperature of human body?
8. What is the temperature of freezing water?
9. What is shown on these thermometers?

a.



b.



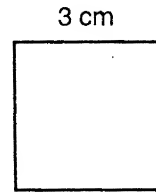
10. What is the difference in temperature?

Objective: Review perimeter of squares, rectangles, triangles and circles.

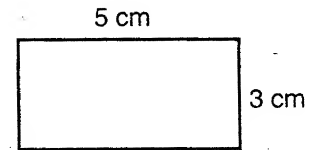
Study

* π is the same for all circles. It is the ratio of the circumference to the diameter of a circle $\frac{C}{d} = \frac{C}{d}$

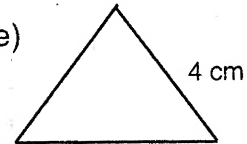
Perimeter of a square = 4 x length of one side
 $= 4 \times 3 \text{ cm}$
 $= 12 \text{ cm}$



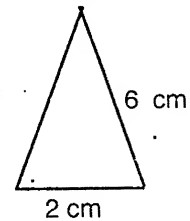
Perimeter of a rectangle = 2 x (length + width)
 $= 2 \times (3 + 5)$
 $= 16$



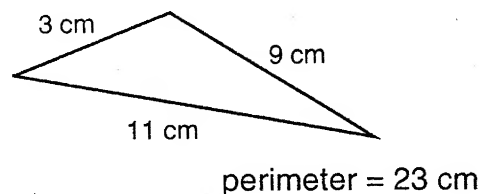
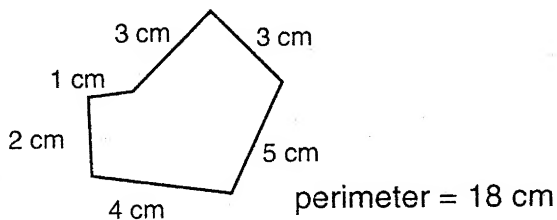
Perimeter of an equilateral triangle = 3 x (length of one side)
 $= 3 \times 4$
 $= 12$



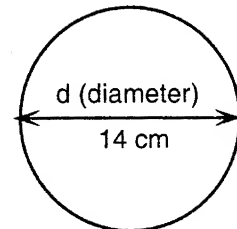
Perimeter of an isosceles triangle = length of one side + (2 x length of other sides)
 $= 2 + (2 \times 6)$
 $= 16 \text{ cm}$



To find the perimeter of irregular shapes you must find the sum of the length of all the sides.



The perimeter of a circle = diameter of the circle $d \times \pi$
 $= 14 \text{ cm} \times \frac{22}{7}$
 $= 44 \text{ cm}$

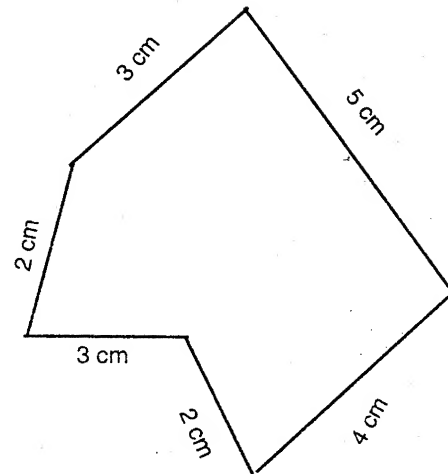
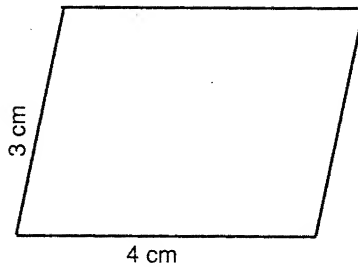
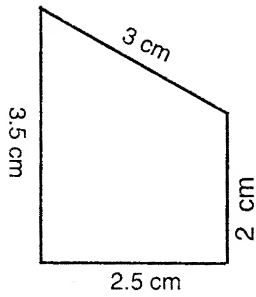
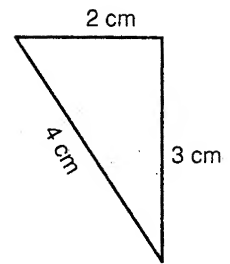
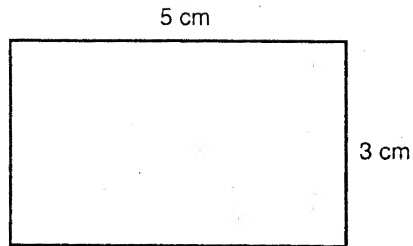
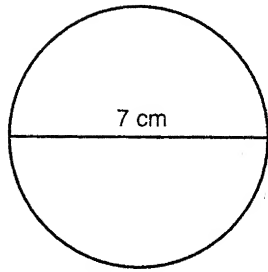
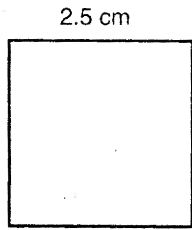


π is the Greek letter Pi.*

The perimeter of a circle is called the circumference.

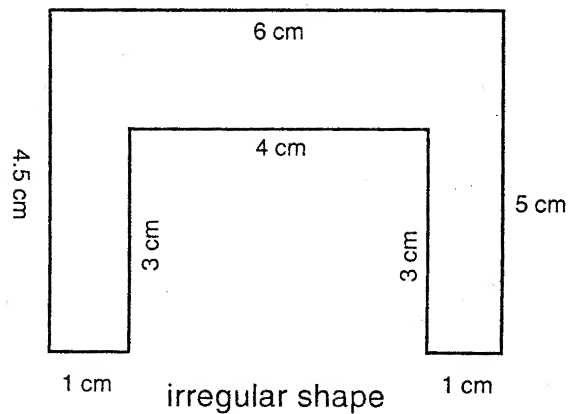
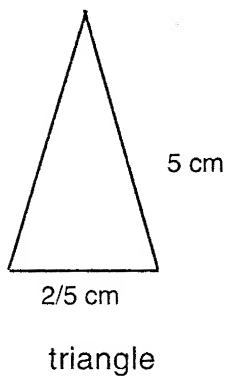
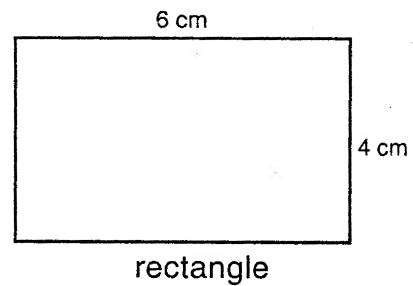
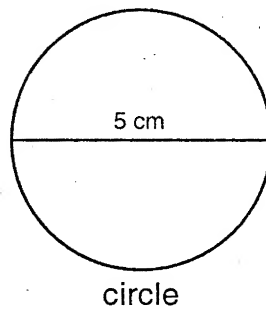
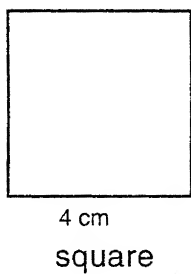
Practice

1. Find the perimeters of the following figures.



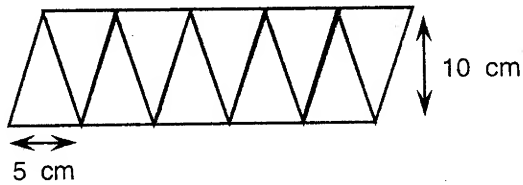
2. Write the name of the figure with the given perimeter

a. _____ 12.5 b. _____ 20 cm c. _____ 27.5 d. _____ 15.714 cm e. _____ 16 cm



3. Taj Mohammad's house is rectangular in shape. The length of his house is 25 m and width is 20 m. What is the perimeter?
4. Daood wants to fence a small square vegetable garden. One side of the garden is 12.5 m. How many meters of wire will be required to fence the garden if he makes the fence with three rows of wire?
5. Zalmi has a square shaped table. One side of the table is 1.5 m. How many meters of fringe are needed to trim the sides of the table?

6. A pattern of tiles in a mosque looks like this:

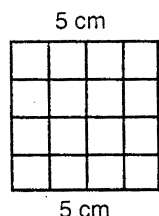


What is the perimeter around a row of 200 tiles arranged in this way?

Objective: Review of the area of squares, rectangle, triangle and circle.

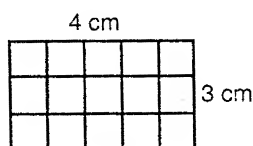
Study

The area of a figure is the amount of space it covers. It is measured in square centimeters (cm^2) if it is a small area. It is measured in square meters (m^2) if it is a big area.



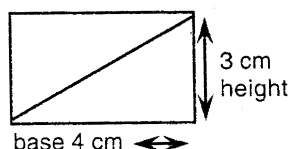
To find the area of a square we multiply the length of two sides

$$5 \times 5 = 25 \text{ cm}^2$$



To find the area of a rectangle we multiply length x width

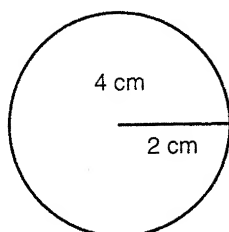
$$4 \times 3 = 12 \text{ m}^2$$



To find the area of a triangle we multiply height x base and then divide by two

$$3 \times 4 = 12$$

$$\frac{12}{2} = 6 \text{ cm}^2$$



The area of a circle = $r \times r \times \pi$

$$\text{area} = 2 \times 2 \times \pi$$

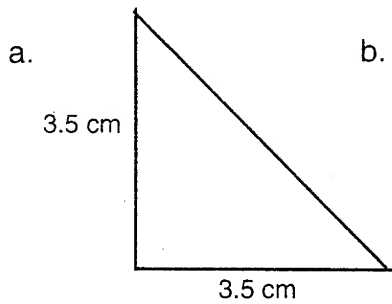
$$= 4 \times \frac{22}{7}$$

$$= 12 \frac{4}{7} \text{ cm}^2$$

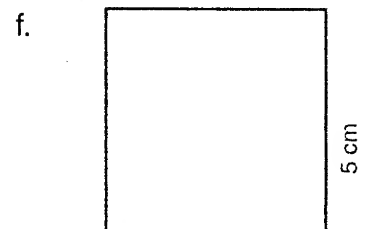
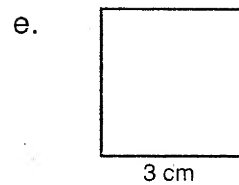
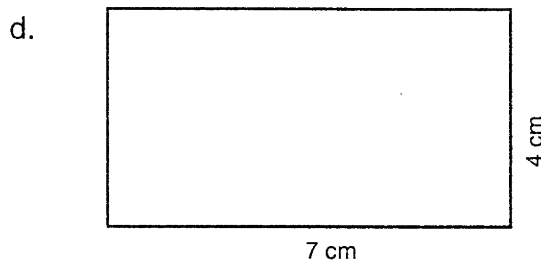
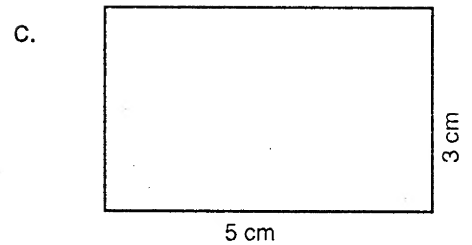
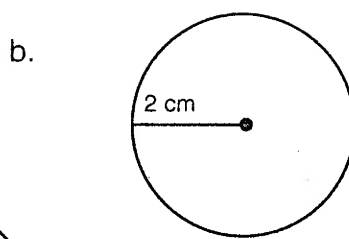
radius (r) = the distance from the edge of the circle to the center.

Practice

1. Find the area of the following figures.



$$\begin{aligned}\text{area} &= (\text{base} \times \text{height}) \div 2 \\ &= (3.5 \times 3.5) \div 2 \\ &= 6.125 \text{ cm}^2\end{aligned}$$



2. Find the area of:

a. a triangle (height = 2 cm, base = 5 cm)

b. a rectangle (length = 5 cm, width = 4 cm)

c. a square (side = 10 cm)

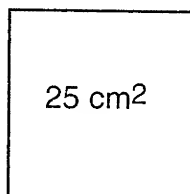
d. a circle (radius = 4 cm)

Objective: To find the length of one side when the area is known.

Study

If we know the area of a regular shape, and the length of one of the sides we can find the length of all the sides.

Think about a square with an area of 25 cm^2 and one side of it = 5 cm



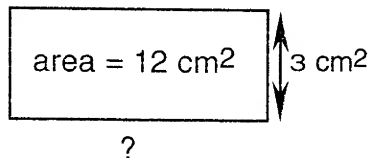
Remember that to find the area of a square we multiply the length of two sides.

So, what number multiplied by itself = 25

$$5 \times 5 = 25$$

So the length of each side of the square is 5 cm .

Think about a rectangle.



What is the length of the rectangle?

Remember length \times width = area of a rectangle

$$? \times 3 = 12 \text{ cm}^2$$

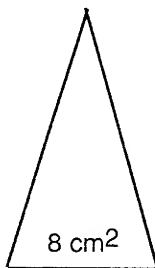
What number multiplied by 3 equals 12?

$$4 \times 3 = 12$$

So the length of the rectangle = 4 cm

Think about a triangle. What is the width of the base?

Remember area of a triangle = $(\text{height} \times \text{base}) \div 2$



$$8 \text{ cm}^2 = (4 \times ?) \div 2$$

What number divided by 2 equals 8? The answer is 16.

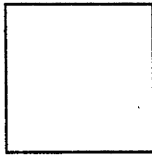
$$8 \text{ cm}^2 = (4 \times 4) \div 2$$

$$\text{base} = 4 \text{ cm}$$

Practice

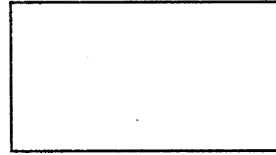
1. Find unknown dimension of the following figures.

a.



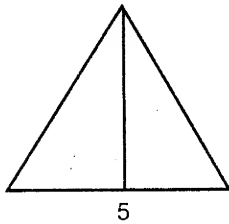
area = 16 cm^2
side =

b.



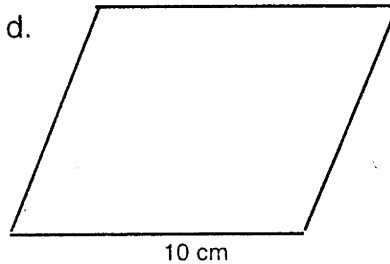
area = 18 cm^2
width = 3 cm
length = ?

c.



area = 10 cm^2
base = 5 cm
height = ?

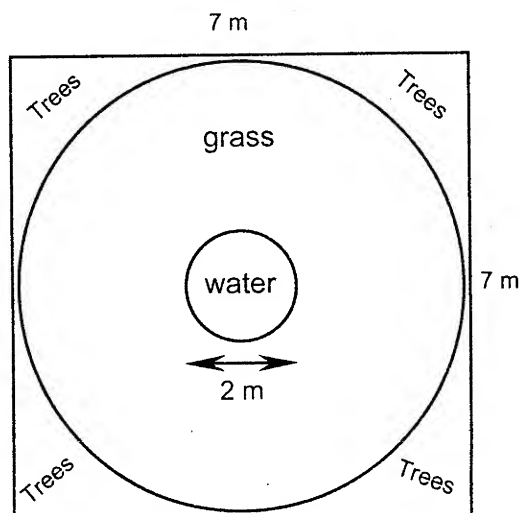
d.



area = 50 cm^2
base = 10 cm
height = ?

2. Here is a plan of a garden.

- Find the area of water pool.
- Find the area of grass.
- find the total area of garden.
- Find the area of the ground that has trees.



Objective: To identify three dimensional figures.

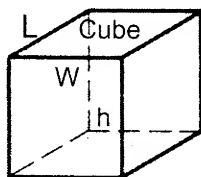
Study

A three dimensional figure has 3 measures.

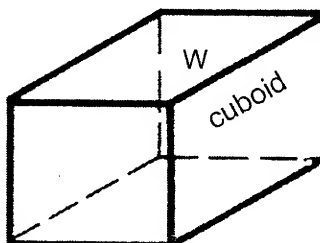
Height = h

Length = L

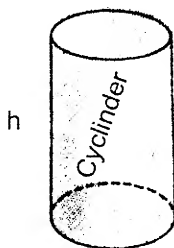
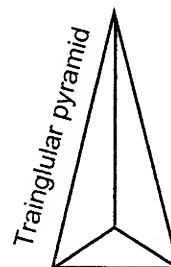
Width = W



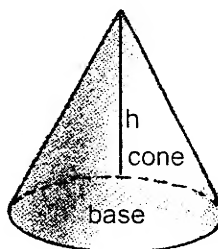
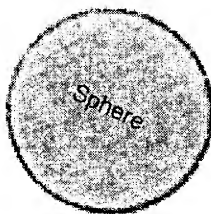
6 surfaces



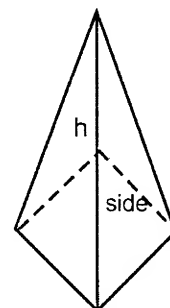
6 surfaces



base
3 surface



2 surfaces



Square Pyramid
5 surfaces

Practice

1. Answer.

- a. How many sides make a cube?
How many sides make a cuboid?
- b. How many square sides in a cuboid?
- c. How many circular sides are in a cylinder?
How many sides does a triangular pyramid have?
- d. How many triangle sides are in a triangular pyramid?
- e. How many circular sides in a cone?
How many sides in a square Pyramid are triangle shaped?
- f. How many sides make a square pyramid?

Objective: Assessment of addition, and subtraction and multiplication of numbers from thousands up to trillion.

1. Match the problem with the correct answer.

- | | |
|-------------------------------|------------|
| a. $67,250 + 25,610,207$ | 484,361 |
| b. $450,689 + 27,465 + 6,207$ | 98,324,419 |
| c. $8,500,299 + 1,450$ | 8,501,749 |
| d. $9,151,214 + 89,173,205$ | 2,677,457 |

2. Solve.

- a. $174,289 - 68,289 =$
- b. $56,491,207 - 3,489,250 =$
- c. $1,250,369,671,215 - 42,325,314,311 =$
- d. $299,450 - 299,200 =$

3. Find the missing numbers.

- a. $\boxed{} + 12,150 = 240,300$
- b. $80,170 - \boxed{} = 29,192$
- c. $4,102 + \boxed{} + 2,170 = 18,272$

4. Mohammad Omar has purchased goods worth Afg. 522,154,200 from abroad. He sells them with Afg. 274,619 profit. How much does he sell the goods for?

5. There are 289,450 children living in a province of Afghanistan. 199,679 of them have received Polio Vaccine. How many of the children still need to be vaccinated?

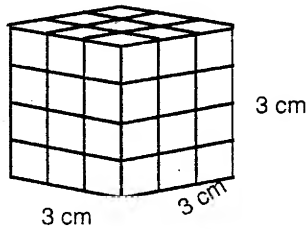
6. There were approximately 562,472,125 trees in Kunar Province forest. The loggers cut 372,471,619 trees from this forest. The people of the province planted 625,189,210 trees. How many trees are there in Kunar forest now?

Objective: To identify the volume of cube.

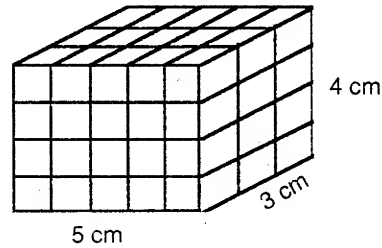
Study

Volumes: We find the volume of a cube or a cuboid by multiplying height x width x length

We express volume in centimeter cubes (cm^3)



$$\begin{aligned}\text{Volume} &= 3 \times 3 \times 3 \\ &= 27 \text{ cm}^3\end{aligned}$$



$$\begin{aligned}V &= 5 \times 4 \times 3 \\ &= 60 \text{ cm}^3\end{aligned}$$

Practice

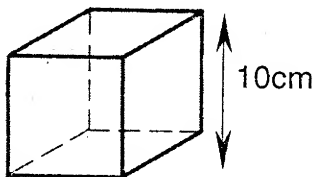
1. Find the volume of the cuboids whose measurements are in the following table.

length	wide	height	volume
1 cm	2 cm	2 cm	4 cm^3
5 cm	3 cm	3 cm	
2 cm	6 cm	6 cm	
3 cm	4 cm	4 cm	
3 cm	5 cm	5 cm	
2 cm	7 cm	7 cm	

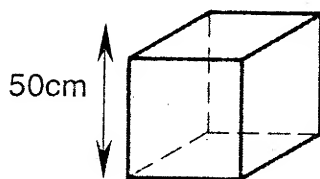
2. Find the volume of the cubes whose measurements are in the following table.

length of side	volume
3 cm	27 cm^3
4 cm	
5 cm	
6 cm	
7 cm	

3. A fish- tank is 50 cm long, 20 cm wide and 15 cm high. How many cubic centimeters of water will it hold?
4. A brick is 21 cm long, 8 cm wide and 6 cm high. What is its volume?
5. A rectangular box measures 20 cm by 8 cm by 7 cm. What is its volume in cubic centimeters?
6. Children like to play with wooden bricks. Here is one brick. It is a cube.



What is the volume of the cube?



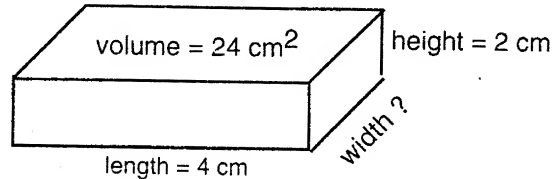
A set of bricks completely fill a big box. How many small cubes fill the big box?

Objective: To determine one dimension of a rectangle when volume is given.

Study

To find unknown dimension of a cube or cuboid.
Look at the following example.

Volume = 24 cm^3
length = 4 cm
height = 2 cm
width = ?



We can find $b = \frac{\text{volume}}{L \cdot h}$

$$b = \frac{24 \text{ cm}^3}{4 \text{ cm} \times 2 \text{ cm}} = \frac{3 \text{ cm}}{1}$$

$$b = 3 \text{ cm}$$

$$24 \text{ cm}^3 = 4 \text{ cm} \times 2 \text{ cm} \times ?$$

$$= 8 \times ?$$

What number multiplied by eight equals 24?
 $8 \times 3 = 24$

The width of the cuboid = 3 cm

Practice

1. Use the measurements given to find the missing measurements of the cuboids.

length	breadth	height	volume
10 cm	4 cm	5 cm	
	12 cm	7 cm	504 cm^3
6 cm	5 cm	4 cm	
11 cm		3 cm	132 cm^3
14 cm		8 cm	
20 cm	9 cm	16 cm	

2. Tahir designs in a classroom cupboard that has a volume of 6 cubic meter (6 m^3). The cupboard is 3 m high and 1 meter long. What is its width?
3. The aquarium in Rahila's home has a volume of $120,000 \text{ cm}^3$. It is 30 cm long and 20 cm wide. What is the height of the aquarium?

Objective: Review area and volume.

• **Study**

To find areas:

of square = side x side

of rectangle = length x width

of triangle (height x base) ÷ 2

of circle = radius x radius x π

$$\pi = \frac{22}{7}$$

To find volume

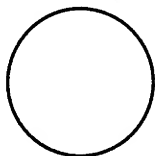
of a cube = side x side x side x side

of a cuboid = length x width x height

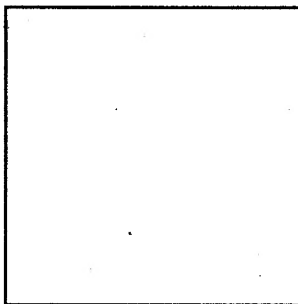
Practice

1. Measure the shapes with a ruler to find the area.

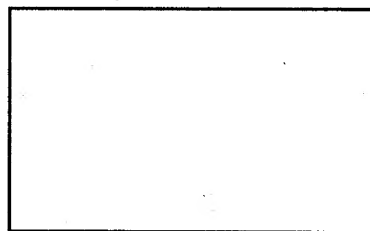
a.



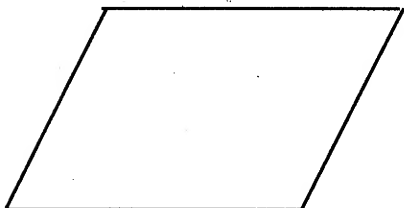
b.



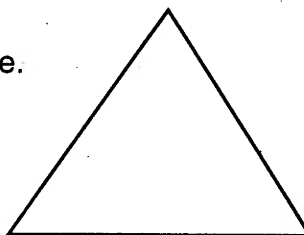
c.



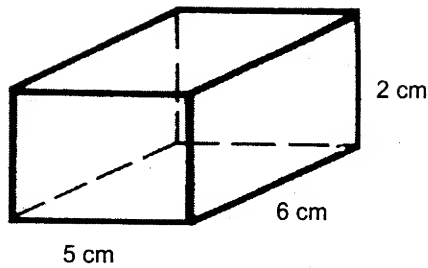
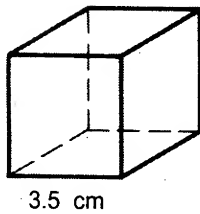
d.



e.



2. Find the volume of the cuboids.



3. The area of a carpet is 36 m^2 and its breadth is 4 m. Find what the length is?
4. A rectangular compound has a perimeter of 96 m. If one side is 30 m long, what will be the length of the other side?
5. What is the area of a square, if one side is 12cm long?
6. A diesel tank is cuboid. It is 4 m long, 3 m wide and 2 m deep. What is the volume of the tank?

Remember: $1 \text{ m}^3 = 1000 \text{ L}$

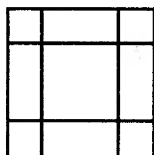
What is the capacity of the tank?

Objective: Assessment of measuring volume, area and circumference.

1. Fill in the blanks in the following table about the dimensions of cubes and cuboids.

Figures	Length	Wide	Height	Volume
cube	6cm			
cube				64 cm^3
cube	8 cm	6 cm	7 cm	
cuboid	9 cm	5 cm		90 cm^3
cuboid	4 cm	2 cm	3 cm	
	7 cm	3 cm	42 cm	
		6 cm	6 cm	216 cm^3

2. A fish tank is 60 cm long, 25 cm wide, and 20 cm high. What is the volume of this fish tank?
3. A room is 6 m long and 4 m high. Find its height if the volume of the room is 120m^3 .
4. Suppose the diameter of your bicycle wheel is 63 cm. How far will you go in one turn of your wheel?
5. Here is a tile pattern.



The large square tile in the center measures 10 cm x 10 cm
The small square tiles in the corners measure 5 cm x 5 cm

What is the area of the big center tile?

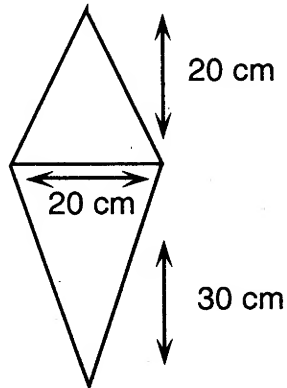
What is the area of a small corner tile?

What is the total area of the 4 rectangular tiles?

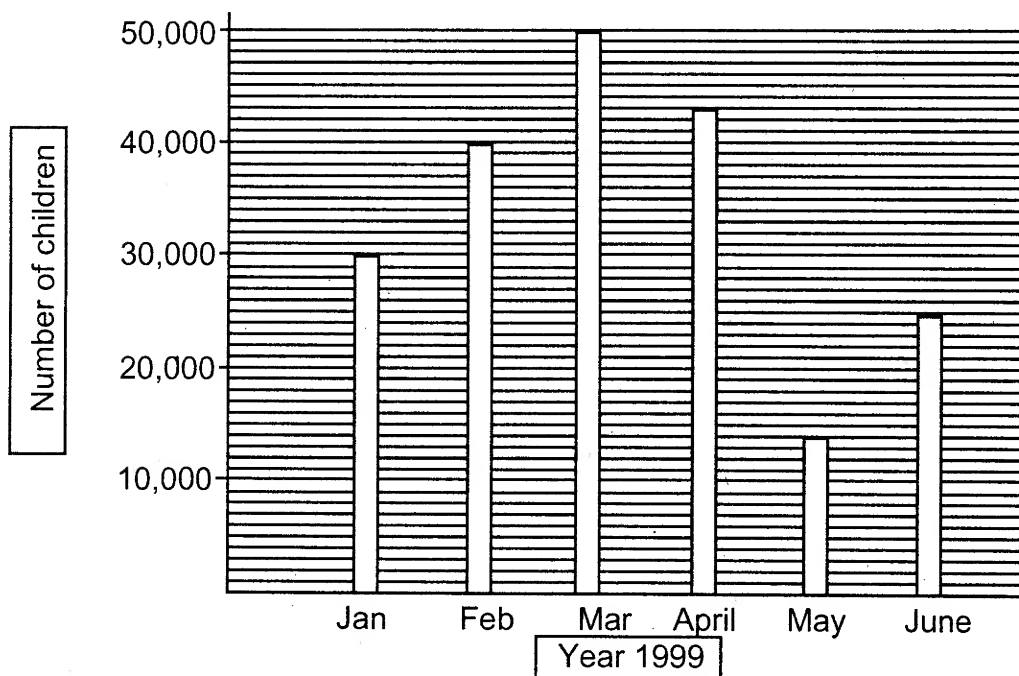
What is the total area of the tile pattern?

6. A round table has a diameter of 150 cm. What is the surface area of the table.

7. The kite is made up of 2 triangles. What is the total area of the kite?



7. The graph shows the number of children vaccinated at Abn-e-Sina Hospital during 1999.



- What is the total number of children who received vaccines in the six months of 1999?
- How many children were vaccinated in the first quarter (Jan, Feb, March) of 1999?
- How many children were vaccinated in the second quarter (April, May, June) 1999?

Objective: Multiply the numbers from thousands to trillion.

Study

When multiplying by 10, 100 and 1000, the answer is the multiplicand plus the number of zeros in the multiplier as shown below.

$$566 \times 10 = 566 \underline{0}$$

$$566 \times 100 = 566 \underline{00}$$

$$566 \times 1000 = 566 \underline{000}$$

$$758 \times 10,000 = 758 \underline{0000}$$

Practice

1. Multiply.

Example: $822 \times 200 = 1644\underline{00}$

a. $771 \times 100 = \underline{\hspace{2cm}}$

c. $8,521 \times 1,000 = \underline{\hspace{2cm}}$

b. $472 \times 10,000 = \underline{\hspace{2cm}}$

d. $4,127 \times 4,000 = \underline{\hspace{2cm}}$

2. A person drew out 512 notes of Afg. 10,000 from Afghanistan National Bank. Calculate the money that has been drawn from the bank.

3. In Afghanistan independence day festival 312 rows of students attended a cultural festival. Each row has 100 students. How many students attended the festival.

Objective: Multiply the numbers from thousand to trillion.

Study

If the multiplicand and multiplier have zeros the product has the all number of zeros.

- a. $55600 \times 10 = 556,000$
- b. $55600 \times 100 = 556,000$
- c. $55600 \times 1000 = 556,00,000$

Practice

1. Multiply.

Example: $765000 \times 1000 = 765,000,000$

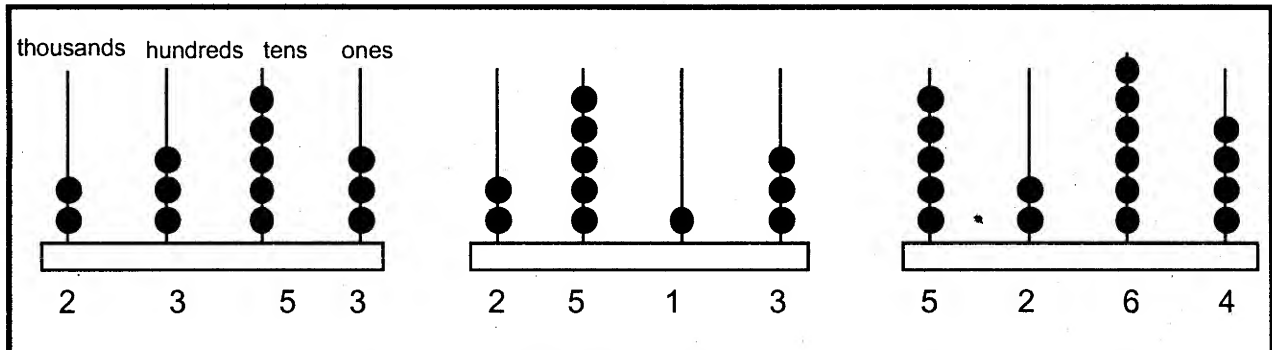
- a. $865,000 \times 10 =$ _____
- b. $94,500 \times 100 =$ _____
- c. $754,000 \times 1,000 =$ _____
- d. $85,700 \times 2,000 =$ _____

2. Mohammad Yunus has a 400 jerib garden in his village. The product of one jerib of his garden is Afg. 85,710,000. Calculate the amount of all his garden produce.

3. If Asad runs 6,500 meter everyday as part of his training programme, how many meters will he run in the course of 200 days?

Objective: Review place value up to thousands.

Study



Practice

1. Write the numbers before and the number after.

Example: 5844 5845 5846

- a. _____ 8954 _____
 b. _____ 9745 _____

2. Compare the following numbers using > and <.

Example: 8721 8271

a. 9645 7375

b. 4354 3245

3. Write the following numbers in words.

Example: 1454 One thousand four hundred and fifty four

- a. 5456
 b. 8759
 c. 9241

4. Write the dates in the following sentences in numbers.

- a. Rehman Baba was born in one thousand and forty two.
 b. Independence date of Afghanistan is twelve hundred and ninety eight.
 c. Hazrat Mohammad was born in five hundred and seventy one.

Objective: Multiply the numbers from thousand up to one trillion.

Study

$$\begin{array}{r}
 \text{a.} \quad 5678 \\
 \times 32 \\
 \hline
 11356 \quad (2 \times 5678) \\
 + 170340 \quad (30 \times 5678) \\
 \hline
 181696
 \end{array}$$

$$\begin{array}{r}
 \text{b.} \quad 747 \\
 \times 35 \\
 \hline
 3735 \\
 + 22410 \\
 \hline
 26145
 \end{array}$$

Practice

1. Multiply.

Example: $219 \times 13 =$

$$\begin{array}{r}
 \times 13 \\
 \hline
 657 \\
 2190 \\
 \hline
 2,847
 \end{array}$$

a. $8205 \times 47 =$

b. $8745016 \times 98 =$

c. $5671212 \times 38 =$

d. $700512 \times 86 =$

2. There are 68 business Companies in Herat province of Afghanistan. These companies decided to donate an equal amount of Afg. to establish a welfare organization. Each company donates Afg. 57,299,019. How much Afghani will be in the initial fund of this welfare organization?

Objective: Multiply the numbers from thousand up to trillion.

Study

$$\begin{array}{r} \text{a.} \quad 4005 \\ \times 84 \\ \hline 16020 \quad (4 \times 4005) \\ 320400 \quad (80 \times 4005) \\ \hline 336,420 \end{array}$$

$$\begin{array}{r} \text{b.} \quad 7055 \\ \times 802 \\ \hline 14110 \quad (2 \times 7055) \\ 00000 \quad (0 \times 7055) \\ 5644000 \quad (800 \times 7055) \\ \hline 5,658,110 \end{array}$$

Practice

1. Circle the letters of correct answer.

Example: $1606 \times 28 =$ a. 78005 **b. 44968** c. 44968 d. 8540

- a. $2025 \times 34 =$ A. 68140 B. 68850 C. 68250 D. 68012
 b. $71026 \times 102 =$ A. 726442 B. 725462 C. 72446 D. 7244652
 c. $80015 \times 58 =$ A. 4640870 B. 452077 C. 354087 D. 4620870

2. There was an exhibition of Afghan women handicrafts held by an organization in Kabul city. During the exhibition 102 carpets were sold. Each carpet cost Afg. 412, 157. Calculate the money that the organization received from carpet selling.

3. A complete school uniform at Zarghoona Ana high school cost Afg. 12,005. If there are 507 children at the school, what will be the total uniform bill for all of the children?

Objective: Multiply the numbers from thousand up to trillion.

Study

$$\begin{array}{r}
 \text{a.} \quad 5638 \\
 \times 357 \\
 \hline
 39466 \quad (5638 \times 7) \\
 281900 \quad (5638 \times 50) \\
 1691400 \quad (5638 \times 300) \\
 \hline
 2,012,766
 \end{array}$$

$$\begin{array}{r}
 \text{b.} \quad 62173 \\
 \times 359 \\
 \hline
 559557 \quad (9 \times 62173) \\
 3108650 \quad (50 \times 62173) \\
 18651900 \quad (300 \times 62173) \\
 \hline
 22,320,107
 \end{array}$$

Practice:

1. Multiply.

Example: $9873 \times 225 =$

$$\begin{array}{r}
 9873 \\
 \times 225 \\
 \hline
 49365 \\
 197460 \\
 1974600 \\
 \hline
 2,221,425
 \end{array}$$

a. $541,205 \times 217 =$

b. $1,415,1200 \times 309 =$

c. $39,382 \times 897 =$

d. $6742 \times 113 =$

2. If a toy factory produces 87,890 toy cars everyday, how many cars will be produced in a year of 296 working days?

3. One airplane was used on a 4960 Km trip 152 times during one year. How many Kms did the plane fly during the year.

Objective: Multiply the numbers from thousand upto trillion.

Study

5627	
x 3571	
<u>5627</u>	(5627 x 1)
393890	(5627 x 70)
2813500	(5627 x 500)
16871000	(5627 x 3000)
<u>20,084,017</u>	

Practice

1. Multiply.

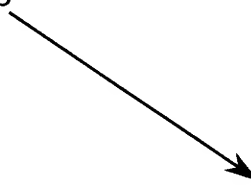
Example: $4599 \times 3613 =$

4599
x 3613
<u>13797</u>
45990
2759400
<u>13797000</u>
16,616,187

- 6007×1345
- 41273×5323
- 3885×2954
- 26175×2107

2. Match the problem to the correct answer.

Example: 32025×4213

- | | |
|------------------------|-------------|
| a. 4574×9445 | 68,978,931 |
| b. 6022×8413 | 43,201430 |
| c. 7356×3459 | 50,663,086 |
| d. 95104×7253 | 25,444,404 |
| | 134,921,325 |
- 

- 4532 houses have been constructed in an area of Kabul. Each house has been sold at Afg.352417. Calculate the money received by the construction.

Objective: Assessment of multiplication of the numbers from thousand upto trillion.

1. Multiply.

a. $5544 \times 10 =$

b. $7850 \times 1000 =$

c. $7852 \times 100 =$

d. $45600 \times 100 =$

e. $3821 \times 47 =$

f. $9562 \times 235 =$

g. $16479 \times 4858 =$

h. $8002 \times 305 =$

2. Multiply 5672 with 38, then multiply 38 with 5671. What are the answers? Are the answers the same or different, if they are different write the difference.

3. A nearby city school administration called the people for assisting the school. Khair Mohammad wants to provide stationary to the students in a nearby school. He purchased stationary for 4702 students. If the cost of the stationary for each student is Afg. 10,900, how much does Khair Mohammad have to pay for the school?

Objective: Divide the numbers from thousand upto trillion.

Study

If the dividend and divisor both have zeros on the right, the number of zeros in the divisor can be cancelled with the number of zeros in the dividend.

$$656\cancel{0} \quad \cancel{10} = 656$$

$$785\cancel{00} \quad \cancel{100} = 785$$

$$9640\cancel{00} \quad \cancel{100} = 9640$$

Practice

1. Divide.

Example: $5430 \div 10 = 543$

a. $78,500 \div 10$

b. $6,750,000 \div 10,000$

c. $9,845,000 \div 100$

d. $974,000 \div 1000$

2. There are 27,410,000 Afg in an Afghanistan bank in this year. How many 10,000 Afg are there in this amount?

a. How many 1,000 Afg. notes are there in this amount?

b. How many 100 Afg. notes are there in this amount?

c. How many 100 Afg. notes are there in this amount?

d. How many 10 Afg. notes are there in this amount?

e. How many 20 Afg. notes are there in this amount?

f. How many 50 Afg. notes are there in this amount?

Objective: Divide the numbers from thousand upto trillion.

Study

Look at the divisor and chose an equal number from the dividend before you start dividing.

a.
$$\begin{array}{r} 251 \\ 25 \overline{) 6275} \\ \underline{- 50} \\ 2 \end{array}$$

How many 25s in 6? $\longrightarrow 0$
 How many 25s in 62? $\longrightarrow 2$
 Subtract 2 x 25

$$\begin{array}{r} 25 \\ 25 \overline{) 6275} \\ \underline{- 50} \\ 127 \\ \underline{- 125} \\ 2 \end{array}$$

How many 25s in 12? $\longrightarrow 0$
 How many 25s in 127? $\longrightarrow 5$
 Subtract 5 x 25

$$\begin{array}{r} 251 \\ 25 \overline{) 6275} \\ \underline{- 50} \\ 127 \\ \underline{- 125} \\ 25 \\ \underline{- 25} \\ 0 \end{array}$$

How many 25s in 25? $\longrightarrow 1$
 Subtract 1 x 25

b.
$$\begin{array}{r} 0450 \\ 56 \overline{) 25200} \\ \underline{- 00} \\ 252 \\ \underline{- 224} \\ 0280 \\ \underline{- 280} \\ 000 \\ \underline{- 0} \\ 0 \end{array}$$

Practice

1. Divide.

Example: 12095 59

$$\begin{array}{r} 205 \\ 59 \overline{) 12095} \\ \underline{- 118} \\ 295 \\ \underline{- 295} \\ 000 \end{array}$$

- a. 19,251 31
 b. 37,305 45
 c. 59,965 67

2. UNICEF Afghanistan is providing 45,500 notebooks for Nahide - Shaeed school students. Each student receives 25 notebooks. No notebooks remain. How many students receive notebooks?
3. The agriculture department of Nangarhar province distributed equally 18,645 sapling trees to 33 villages. Calculate the numbers of trees that each village has received.

Objective: Divide the numbers from thousand upto trillion with a remainder.

Study

$$\begin{array}{r}
 088 \\
 37 \overline{) 3259} \\
 \underline{- 00} \\
 325 \\
 \underline{- 296} \\
 299 \\
 \underline{- 296} \\
 3
 \end{array}$$

In division the remainder can be written over the divisor as a fraction as shown below:

$$88 \frac{3}{37}$$

Practice

1. Divide.

Example: $3739 \div 59 = 63 \text{ r. } 22$

$$\begin{array}{r}
 0063 \\
 59 \overline{) 3739} \\
 \underline{- 354} \\
 199 \\
 \underline{- 177} \\
 \text{r. } 22
 \end{array}$$

- a. $18241 \div 63$
- b. $6037 \div 51$
- c. $59617 \div 89$

2. An organization has purchased 589671 ton wheat and wants to store the amount of wheat in 96 stores. Each store holds the same amount. How many tons of wheat can be stored in each store?

Objective: Divide the numbers from thousand upto trillion.

Study

a. $826934 \ 56$

$$\begin{array}{r}
 14766 \\
 56 \overline{) 826934} \\
 \underline{- 56} \\
 266 \\
 \underline{- 224} \\
 429 \\
 \underline{- 392} \\
 373 \\
 \underline{- 336} \\
 374 \\
 \underline{- 336} \\
 38
 \end{array}$$

How many 56s in 826? $\rightarrow 1$

How many 56s in 266? $\rightarrow 4$

How many 56s in 429? $\rightarrow 7$

How many 56s in 373? $\rightarrow 6$

How many 56s in 374? $\rightarrow 6$

The answer is 14766 r 38

b. $2475 \ 50$

$$\begin{array}{r}
 049 \\
 50 \overline{) 2475} \\
 \underline{- 00} \\
 247 \\
 \underline{- 200} \\
 475 \\
 \underline{- 450} \\
 25
 \end{array}$$

The answer is:

$$49 \frac{25}{50}$$

Practice

1. Divide.

Example: $9425 \ 75 = 127$

$$\begin{array}{r}
 127 \\
 75 \overline{) 9425} \\
 \underline{- 75} \\
 192 \\
 \underline{- 150} \\
 425 \\
 \underline{- 425} \\
 0
 \end{array}$$

a. $6,238 \ 76$

b. $85030 \ 68$

c. $658154 \ 74$

2. There are 4,546 apples ready to be packed equally in 18 boxes. How many apples are there in each box?

Objective: Divide the numbers from one thousand up to trillions.

Study

$$\begin{array}{r}
 198270 \\
 25 \overline{) 4956750} \\
 \underline{- 25} \\
 245 \\
 \underline{- 225} \\
 206 \\
 \underline{- 200} \\
 67 \\
 \underline{- 50} \\
 175 \\
 \underline{- 175} \\
 0
 \end{array}$$

How many 25s in 49? $\longrightarrow 1$

How many 25s in 245? $\longrightarrow 9$

How many 25s in 206? $\longrightarrow 8$

How many 25s in 67? $\longrightarrow 2$

How many 25s in 175? $\longrightarrow 7$

Practice

1. Match the problems to the correct answers.

Example: 95,232 256

321

a. 442,629 561

153

b. 209934 654

789

c. 119,727 159

753

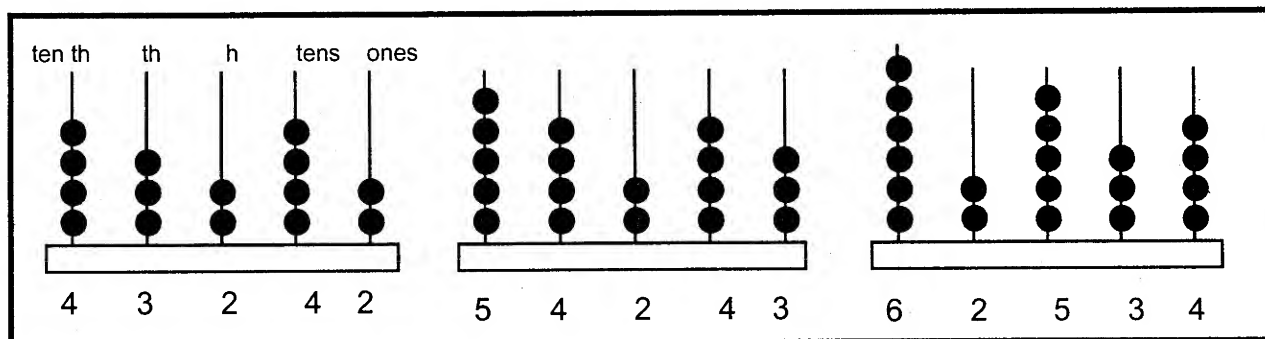
d. 116,125 759

372

2. During a one year 290,000 people visited a museum. The center was open for 290 days during the year. On average, how many people visited the center each day?

Objective: Review place value up to ten thousands.

Study



Practice

1. Write the missing numbers.

a.

18,964
18,966

b.

26,454

c.

39,998

2. a. Write a number with six in the ten thousand place. All the digits in the the number must be different.
- b. Write a number with nine in the hundreds place. Make two digits in the number the same.
- c. Write a number with eight in the tens place. Make two digits in the number the same.
- d. Write a number with two in the ones place. Make three digits in the number the same.

3. Order the numbers from biggest to smallest.

15625, 19126, 26274

4. Order the numbers from smallest to biggest.

56718, 84562, 21989

Objective: Divide the numbers from thousand up to trillions with remainders.

Study

$$\begin{array}{r}
 1269 \\
 381 \overline{) 483759} \\
 \underline{- 381} \\
 1027 \\
 \underline{- 762} \\
 2655 \\
 \underline{- 2286} \\
 3699 \\
 \underline{- 3429} \\
 270
 \end{array}$$

How many 381s in 483? \longrightarrow 1

How many 381s in 1027? \longrightarrow 2

How many 381s in 2655? \longrightarrow 6

How many 381s in 3699? \longrightarrow 9

$$483,759 \div 381 = 1269 \text{ r } 270$$

Practice

1. Divide.

Example: 515,435 \div 657

$$\begin{array}{r}
 784 \text{ r } 347 \\
 657 \overline{) 515435} \\
 \underline{- 4599} \\
 5553 \\
 \underline{- 5256} \\
 2975 \\
 \underline{- 2628} \\
 347
 \end{array}$$

- 99497 \div 527
- 252319 \div 497
- 51217 \div 371
- 60317 \div 439

- School children in Kabul raise Afg. 4006750 to help needy people. If this is shared between 520 needy families, how much does each family gets and how much money will be left over?
- A rocket travels a distance of 759627 Km in 245 hours. How many Km does it travel in an hour?

Objective: Review of division of the numbers from thousand upto trillion.

Practice

1. This chart show the salary of a school staff.
Example: Find the average salary of one clerk?

Chart of Schools Monthly Salary

Position	No	Total amount of salary
Teachers	412	454,123,045
Headmasters	43	51,327,569
Guards	86	83,002,000
Clerks	43	45,376,180

45376180 \div 43 = 1,005,260 Afgs

$$\begin{array}{r}
 1,055,260 \\
 43 \overline{) 45376180} \\
 \underline{- 43} \\
 237 \\
 \underline{- 215} \\
 226 \\
 \underline{- 215} \\
 111 \\
 \underline{- 86} \\
 258 \\
 \underline{- 258} \\
 0
 \end{array}$$

- Find the average salary of one teacher per month.
 - Calculate the average salary of one headmaster.
 - Calculate the average salary of one guards.
2. There are 6862,968 soldiers in a military section. The chief officer wants to group these soldiers as follows:
Find the number of the groups.
- On Sunday, he arranges 612 persons in each group.
 - On Monday, he arranges 86 persons in each group.
 - On Tuesday, he arranges 63 persons in each group.

Objective: Assessment of division of numbers from thousands to trillions.

1. Divide.

a. $76,000 \div 6200 =$ _____

d. $400512 \div 47 =$ _____

b. $34776 \div 46 =$ _____

e. $48054 \div 317 =$ _____

c. $173943 \div 231 =$ _____

f. $50241 \div 105 =$ _____

2. A community organization want to increase the number of livestock in its village. They have purchased some new livestock and the table shows the total price of each type of animal. Calculate the price of each animal to complete the table.

Livestock	Number of livestock	Total Price(Afg)	Price of one animal
Sheep	711	462,150,000	
Goat	95	51,300,000	
Cow	12	61523304	

3. Agriculture department has allocated 67,533,142 Afgs for purchasing spray machines for farmers. 746 machines have been purchased. Calculate the price for each machine.

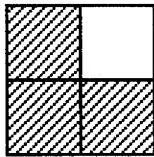
Objective: Review of fraction.

Study

If a whole is divided into four equal parts we call each part a quarter $\frac{1}{4}$.

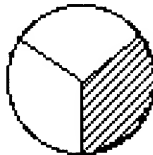
$\frac{3}{4}$ of the figure is shaded.

write: $\frac{3}{4}$



If a whole is divided into three equal parts, we call each part a third $\frac{1}{3}$. $\frac{1}{3}$ of the figure is shaded.

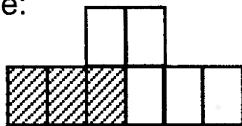
$\frac{1}{3}$



Practice

1. Match the figures with the correct fractions:

Example:



5

6

2

5

1

4

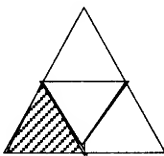
3

8

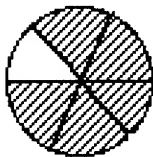
3

5

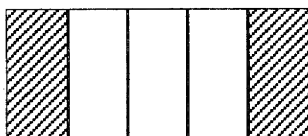
a.



b.

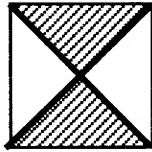


c.



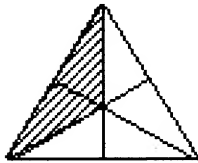
2. Find the fraction of the shaped that is shaded.

Example:



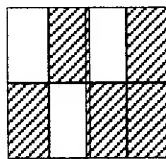
- A. $\frac{2}{4}$ B. $\frac{2}{2}$ C. $\frac{4}{5}$ D. $\frac{3}{4}$

a.



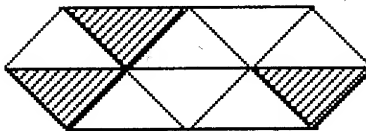
- A. $\frac{6}{2}$ B. $\frac{2}{6}$ C. $\frac{3}{6}$ D. $\frac{5}{6}$

b.



- A. $\frac{3}{8}$ B. $\frac{4}{8}$ C. $\frac{5}{8}$ D. $\frac{8}{5}$

c.



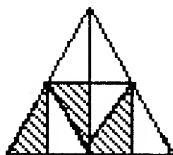
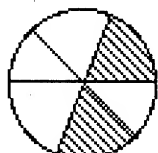
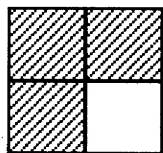
- A. $\frac{4}{10}$ B. $\frac{3}{10}$ C. $\frac{5}{10}$ D. $\frac{7}{10}$

3. Akram divided an apple into three parts and ate two parts of the apple. What fraction of the Apple has been eaten?

4. From five parts of a carpet, Fatima has woven three fifths of her carpet. How much remains to be woven?

Objective: Review of rational fraction.

Study



$\frac{3}{4}$ ← numerator 2
 ← denominator 6

$\frac{3}{8}$

$\frac{2}{9}$

In above fractions the numerators are smaller than the denominators. These kinds of fractions are called **rational** fractions.

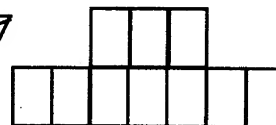
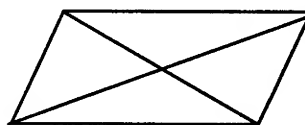
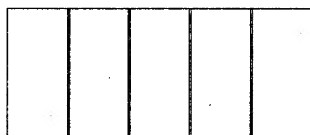
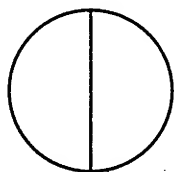
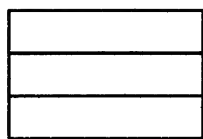
Practice

1. Study the following fractions and find the rational fractions. Follow the example.

$\frac{3}{4}$, $\frac{4}{3}$, $\frac{3}{2}$, $\frac{7}{4}$, $\frac{4}{11}$, $\frac{3}{9}$, $\frac{9}{5}$

$\frac{13}{2}$, $\frac{14}{7}$, $\frac{1}{5}$, $\frac{2}{13}$, $\frac{5}{17}$, $\frac{6}{5}$, $\frac{3}{5}$

2. Shade the figures equal to the fraction.



$\frac{2}{3}$

$\frac{1}{2}$

$\frac{2}{5}$

$\frac{3}{4}$

$\frac{7}{10}$

Objective: Review of cancelling of rational fractions.

Study

Reduce the fraction by dividing the numerator and denominator by the same number.

$$\frac{8}{40} = \frac{8 \div 8}{40 \div 8} = \frac{1}{5}$$

$$\frac{15}{45} = \frac{15 \div 5}{45 \div 5} = \frac{3}{9} = \frac{3 \div 3}{9 \div 3} = \boxed{\frac{1}{3}}$$

$$\frac{40}{160} = \frac{40 \div 40}{160 \div 40} = \boxed{\frac{1}{4}}$$

Practice

1. Reduce the following fractions to their lowest terms:

Example: $\frac{2}{4} = \frac{2 \div 2}{4 \div 2} = \frac{1}{2}$

a. $\frac{16}{20}$

b. $\frac{49}{63}$

c. $\frac{45}{90}$

d. $\frac{24}{32}$

e. $\frac{18}{24}$

f. $\frac{30}{50}$

2. Are these fractions in their lowest terms?
Reduce them to their lowest terms.

Example: $\frac{\cancel{2}}{\cancel{6}/3} = \frac{2}{3}$

a. $\frac{4}{12}$

b. $\frac{4}{16}$

c. $\frac{5}{21}$

d. $\frac{3}{21}$

e. $\frac{10}{22}$

f. $\frac{6}{17}$

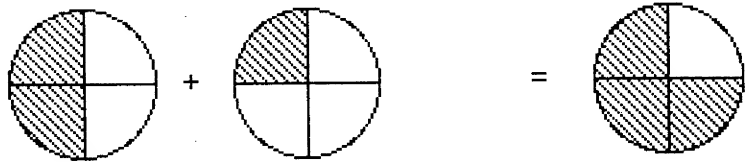
g. $\frac{8}{24}$

h. $\frac{8}{30}$

Objective: Review of addition of rational fractions with like fractions.

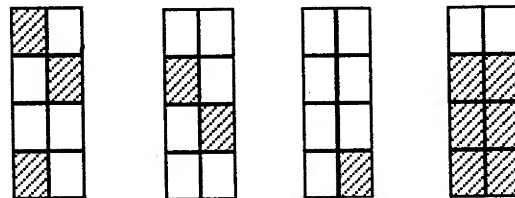
Study

How many quarters are coloured?



2 quarters + 1 quarter = 3 quarters

$$\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$$



$$\frac{3}{8} + \frac{2}{8} + \frac{1}{8} = \frac{6}{8}$$

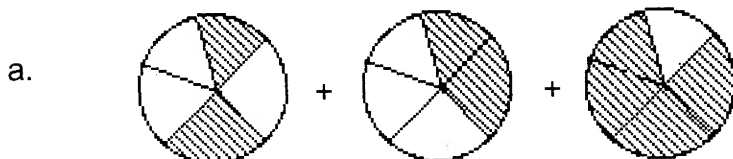
$$\frac{\cancel{3}}{\cancel{8}} = \frac{3}{4}$$

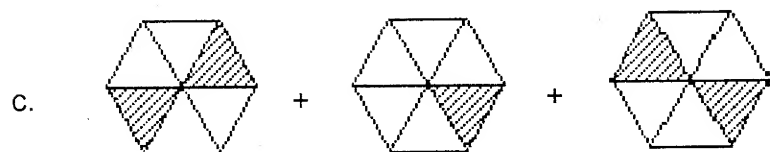
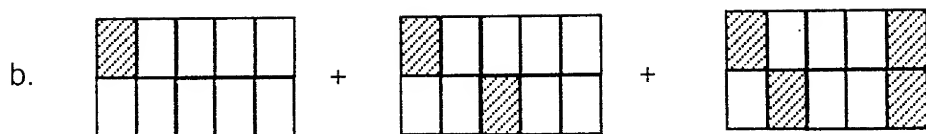
Practice

1. Look at the shapes and the fractions that are shaded.

Example:

$$\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$





2. Add.

a. $\frac{3}{5} + \frac{1}{5}$

e. $\frac{2}{13} + \frac{4}{13} + \frac{5}{13}$

b. $\frac{1}{3} + \frac{1}{3}$

f. $\frac{2}{8} + \frac{1}{8} + \frac{3}{8}$

c. $\frac{1}{7} + \frac{3}{7} + \frac{2}{7}$

g. $\frac{3}{9} + \frac{1}{9} + \frac{2}{9}$

d. $\frac{3}{11} + \frac{5}{11} + \frac{2}{11}$

3. Habiba divided an apple into 5 parts and gave two parts of the apple to her son and one part to her sister. How much apples does she give to them?

4. One third of a garden is planted with beans, $\frac{1}{3}$ is planted with tomatoes. What part of the garden is planted?

Objective: Review of Fractions comparison.

Study

- a. In like fractions, the greater the numerator, the greater the value of the fractional number.

$$\frac{3}{8} \boxed{>} \frac{2}{8}$$

$$\frac{5}{16} \boxed{<} \frac{7}{16}$$

- b. To compare fractions with different denominators, we make denominators the same and then compare.

To make the denominators equivalent, we must find lowest common multiple (LCM).

Consider:

$$\frac{5}{4} \text{ and } \frac{7}{8}$$

The lowest common multiple is the smallest number that is an exact multiple of all denominators.

So for $\frac{3}{4}$ and $\frac{7}{8}$ the number 8 is the LCM.

$$1 \times 8 = 8$$

$$2 \times 4 = 8$$

We change the denominator of $\frac{3}{4}$ to 8 by multiplying the numerator and denominator to 2.

$$\frac{3}{4} \rightarrow \frac{2 \times 3}{2 \times 4} = \frac{6}{8}$$

$$\frac{7}{8} \rightarrow \frac{1 \times 7}{1 \times 8} = \frac{7}{8}$$

$$\frac{6}{8} < \frac{7}{8}$$

Practice

1. Use > or < to compare the fraction.

Example: $\frac{3}{11} \boxed{<} \frac{7}{11}$

a. $\frac{8}{9} \boxed{} \frac{4}{9}$

b. $\frac{5}{12} \boxed{} \frac{3}{12}$

c. $\frac{9}{15} \boxed{} \frac{7}{15}$

5. The table shows how many students are enrolled in four schools.

a. Which school has the most students?

b. Which school has the fewest students?

c. Which school has more than 16,000 students?

d. Which school has less than 16,000 students?

School	Students
Malalai	15.112
S.Jamaluddin Afghani	17.981
Mirwais Nika	16.713
Zarghoona	19.854

2. Use > or < to compare the fractions. First you will have to change the fractions so that they have the same denominator.

Example: $\frac{3}{4} \square \frac{4}{6}$

$$\text{LCM} = 12$$

$$3 \times 4 = 12$$

$$2 \times 6 = 12$$

$$\frac{3}{4} = \frac{3 \times 3}{12} = \frac{9}{12}$$

$$\frac{4}{6} = \frac{2 \times 4}{12} = \frac{8}{12}$$

So $\frac{3}{4} \square \frac{4}{6}$

a. $\frac{3}{5} \square \frac{1}{3}$

c. $\frac{4}{9} \square \frac{2}{3}$

e. $\frac{4}{8} \square \frac{3}{4}$

b. $\frac{1}{2} \square \frac{3}{4}$

d. $\frac{6}{9} \square \frac{4}{6}$

f. $\frac{3}{7} \square \frac{1}{3}$

3. Fatima has purchased $\frac{2}{3}$ meter cloth and Aalia has bought $\frac{3}{4}$ meter cloth who bought more cloth?

4. Akbar has arrived $\frac{4}{5}$ hours to his school today, yesterday he arrived $\frac{5}{9}$ hours to school. Which day he got the school faster?

Objective: Assessment of Rational fractions performance.

1. To match the fractions with the equal given figures.

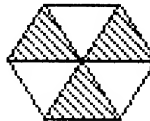
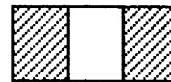
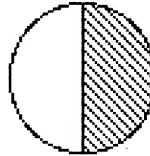
a. $\frac{1}{2}$

b. $\frac{2}{3}$

c. $\frac{2}{5}$

d. $\frac{5}{8}$

e. $\frac{2}{7}$



2. Add.

a. $\frac{4}{10} + \frac{3}{10}$

c. $\frac{2}{4} + \frac{3}{4}$

b. $\frac{4}{7} + \frac{3}{7}$

d. $\frac{3}{8} + \frac{1}{8}$

3. Reduce the following to their lowest terms.

a. $\frac{12}{16}$

c. $\frac{21}{56}$

e. $\frac{81}{108}$

b. $\frac{15}{25}$

d. $\frac{48}{10}$

f. $\frac{22}{66}$

4. Use > or < to compare these fractions.

a. $\frac{1}{4} \square \frac{3}{4}$

c. $\frac{1}{2} \square \frac{2}{3}$

b. $\frac{3}{5} \square \frac{1}{5}$

d. $\frac{3}{5} \square \frac{5}{8}$

5. Two jugs of water are on a table. The red jug holds $\frac{3}{5}$ litre. The blue jug holds $\frac{3}{4}$ litre water. Which jugs hold more water?
6. Zahid has eaten $\frac{3}{7}$ part of a water melon and her mother has eaten $\frac{2}{7}$ of that melon. Find out:
- How much melon have they eaten altogether?
 - Who has eaten most water melon, Zahid or her mother?

Objective: Review of addition of rational fraction with unlike denominators.

Study

For adding of rational fraction with unlike denominator we must first rewrite them, so that they have a common denominator that is divisible by both denominator.

$$\frac{1}{7} + \frac{1}{3}$$

For finding common denominator, we find denominator LCM.

$$\begin{array}{r|rr} & 7 & 3 \\ 3 & 7 & 1 \\ \hline 7 & 1 & 1 \\ \hline 21 & & \end{array}$$

The common denominator is 21.

$$\begin{aligned} \frac{1}{7} + \frac{1}{3} &= \frac{(21 \div 7) \times 1}{21} = \frac{(21 \div 3) \times 1}{21} \\ &= \frac{3}{21} + \frac{7}{21} = \frac{10}{21} \end{aligned}$$

Practice

1. Add.

Example:

$$\frac{2}{3} + \frac{4}{5}$$

$$\begin{aligned} \frac{2}{3} + \frac{4}{5} &= \frac{(15 \div 3) \times 2}{15} = \frac{(15 \div 5) \times 4}{15} \\ &= \frac{10}{15} + \frac{12}{15} = \frac{22}{15} \end{aligned}$$

The denominator LCM is 15.
and it is the common denominator

$$\begin{array}{r|rr} & 3 & 5 \\ 3 & 1 & 5 \\ \hline 5 & 1 & 1 \\ \hline 15 & & \end{array}$$

a. $\frac{1}{3} + \frac{1}{4}$

c. $\frac{2}{3} + \frac{3}{4}$

e. $\frac{5}{7} + \frac{4}{7}$

b. $\frac{2}{5} + \frac{1}{2}$

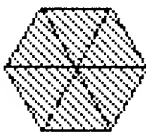
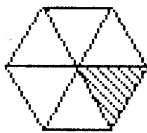
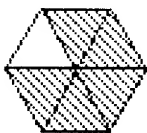
d. $\frac{3}{5} + \frac{2}{7}$

f. $\frac{1}{6} + \frac{5}{7}$

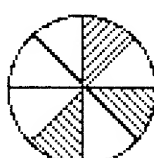
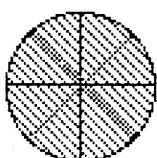
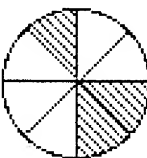
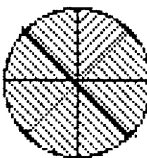
2. Two tables have length of $\frac{7}{10}$ meter and $\frac{1}{2}$ meter. How far do they stretch when placed end to end.
3. Habib spent $\frac{3}{4}$ of his pocket money on comics and $\frac{1}{8}$ on sweets. How much of his money did he spend?

Objective: Review of addition of irrational fraction.

Study



$$\frac{5}{6} + \frac{1}{6} = \frac{6}{6} = 1 \quad (1 \text{ is the whole number})$$



$$\frac{8}{8} + \frac{3}{8} = \frac{11}{8} = 1 \frac{3}{8}$$

A fraction with bigger numerator than denominator is called an irrational fraction. We write irrational fraction as mixed number by dividing the numerator by denominator. For example:

$$\frac{11}{8} = 1 \frac{3}{8}$$

irrational fraction mixed number

We can change mixed numbers to irrational numbers by multiplying of the whole number by denominator and adding it to numerator.

$$1 \frac{4}{5} = \frac{(1 \times 5) + 4}{5} = \frac{9}{5}$$

Practice

1. Find the irrational fractions. One is done for you.

$$\frac{8}{8}$$

$$\frac{3}{8}$$

$$\frac{11}{8}$$

$$\frac{5}{8}$$

$$\frac{9}{7}$$

$$\frac{4}{3}$$

$$\frac{5}{9}$$

$$\frac{16}{21}$$

$$\frac{17}{12}$$

$$\frac{19}{8}$$

$$\frac{11}{23}$$

$$\frac{23}{11}$$

$$\frac{8}{11}$$

$$\frac{7}{5}$$

$$\frac{21}{52}$$

$$\frac{52}{21}$$

2. Change the following irrational fractions to mixed number.

Example: $\frac{11}{7} = 1 \frac{4}{7}$

a. $\frac{23}{7}$

b. $\frac{92}{9}$

c. $\frac{13}{4}$

d. $\frac{51}{13}$

e. $\frac{27}{8}$

f. $\frac{67}{9}$

3. Change these mixed numbers to irrational fractions.

Example: $2 \frac{3}{4} = \frac{(2 \times 4) + 3}{4} = \frac{8 + 3}{4} = \frac{11}{4}$

a. $1 \frac{4}{8}$

d. $4 \frac{3}{6}$

b. $2 \frac{3}{7}$

e. $7 \frac{1}{3}$

c. $3 \frac{4}{5}$

Objective: Review of addition of mixed numbers.

Study

$$2\frac{2}{3} + 1\frac{5}{9}$$

First we add the whole numbers. Then we add the fractions. If the fractions have different denominators we have to find a common denominator.

$$2\frac{2}{3} + 1\frac{5}{9} = 3\frac{2}{3} + \frac{5}{9} = 3\frac{6}{9} + \frac{5}{9} = 3\frac{11}{9} = 4\frac{2}{9}$$

$$1\frac{1}{3} + 2\frac{1}{2}$$

Or

We change the mixed number to irrational fraction and then add them.

$$\begin{aligned} 1\frac{1}{3} + 2\frac{1}{2} \\ \frac{4}{3} + \frac{5}{2} &= \frac{2 \times 4}{6} + \frac{3 \times 5}{6} + \frac{8}{6} + \frac{15}{6} \\ &= \frac{23}{6} = 3\frac{5}{6} \end{aligned}$$

Practice

1. Add.

Example: $2\frac{2}{3} + 4\frac{1}{5}$

$$6\frac{2}{3} + \frac{1}{5} = 6\frac{10}{15} + \frac{3}{15} = 6\frac{13}{15}$$

a. $2\frac{3}{4} + 5\frac{1}{3}$

b. $\frac{3}{7} + 2\frac{7}{9}$

c. $2\frac{5}{9} + 1\frac{7}{11}$

2. Change them to irrational numbers and add.

Example: $1\frac{1}{2} + 2\frac{3}{4} = \frac{3}{2} + \frac{11}{4} = \frac{6}{4} + \frac{11}{4}$
 $= \frac{17}{4} = 4\frac{1}{4}$

a. $3\frac{2}{5} + 4\frac{1}{7}$

d. $2\frac{3}{5} + 4\frac{2}{3}$

b. $6\frac{3}{8} + 2\frac{2}{3}$

e. $3\frac{4}{9} + 2\frac{9}{17}$

c. $\frac{1}{4} + 1\frac{1}{2}$

3. Hamida arrive from her village to school in two hours. She walked $\frac{3}{5}$ km in the first hour and $1\frac{1}{2}$ km in the second hour. Find the distance between her house and her school.

4. Zalmai wants to make two flags for a festival. One of these flags needs $1\frac{3}{5}$ meter clothes and the other needs $2\frac{1}{7}$ meter clothes. Find the total amount of cloth that is needed.

Objective: Assess student understanding of operations on rational, irrational & mixed numbers.

Solve

1. Add these fractions.

a. $\frac{2}{3} + \frac{3}{5}$

c. $\frac{7}{8} + \frac{5}{6}$

e. $\frac{1}{5} + \frac{2}{3}$

b. $\frac{4}{7} + \frac{3}{4}$

d. $\frac{1}{4} + \frac{3}{17}$

2. Add these mixed numbers.

a. $1\frac{4}{5} + 2\frac{3}{7}$

c. $1\frac{3}{11} + \frac{2}{7}$

b. $\frac{5}{7} + 2\frac{4}{9}$

d. $5\frac{6}{7} + 2\frac{1}{11}$

3. Change the mixed number to irrational fraction and add.

a. $3\frac{1}{5} + 2\frac{3}{8}$

c. $\frac{5}{11} + 2\frac{4}{9}$

b. $\frac{2}{3} + 1\frac{8}{9}$

d. $5\frac{1}{2} + 1\frac{17}{19}$

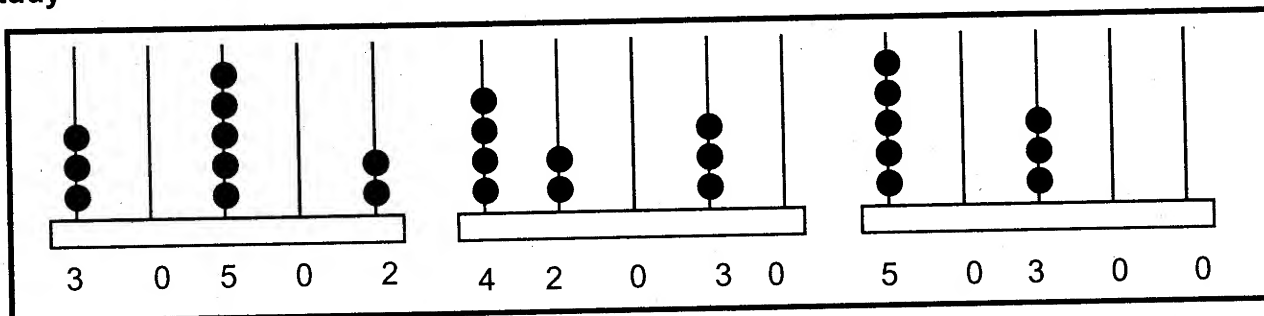
4. A mason finished $\frac{2}{3}$ of his work in the first week and $\frac{1}{7}$ of his work in the second week. Find the total amount of his work completed?

5. A farmer ploughed $\frac{1}{3}$ of his field in the morning and $\frac{2}{5}$ in the afternoon. How much of his field has been ploughed?

6. Daud travels to Paghman from Kabul. He travels $9\frac{1}{2}$ km of the distance by horse and $8\frac{3}{4}$ km by car. What is the distance between Kabul and Paghman?

Objective: Review place value up to ten thousands.

Study



Practice

1. Write the missing numbers.

Example:

60499
60500
60501

a.

	40503	
--	-------	--

b.

90500

c.

60100
60102

2. Compare the following numbers using > and <.

Example: 90300 80050

a. 80500 90003

b. 54000 60020

c. 30600 20001

3. Write the following numbers in words.

Example: 90,004 Ninety thousand and four

a. 40,004 _____

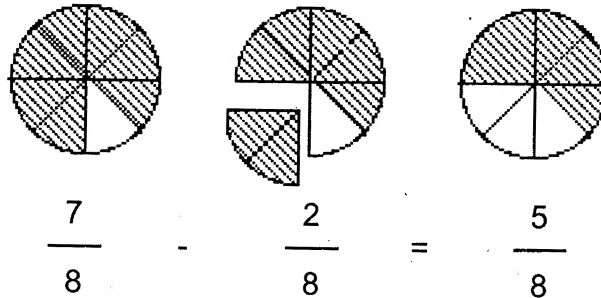
b. 50,603 _____

c. 80405 _____

Objective: Review of subtraction of rational fraction.

Study

For subtraction of like denominator fractions. Subtract only the numerator.
To subtract fractions with the same denominator.



To subtract fraction with unlike denominators find the lowest common denominator and then subtract the fractions.

$$\frac{3}{5} - \frac{1}{6} = \frac{(6 \times 3)}{30} - \frac{(5 \times 1)}{30} = \frac{18}{30} - \frac{5}{30} = \frac{13}{30}$$

The common denominator is 30.

Practice

1. Subtract.

Example: $\frac{16}{19} - \frac{13}{19} = \frac{16 - 13}{19} = \frac{3}{19}$

a. $\frac{5}{10} - \frac{3}{10}$

b. $\frac{13}{15} - \frac{4}{15}$

c. $\frac{11}{21} - \frac{7}{21}$

d. $\frac{15}{16} - \frac{9}{16}$

2. Subtract.

Example: $\frac{7}{9} - \frac{1}{2}$

$$\frac{(2 \times 7)}{18} - \frac{(9 \times 1)}{18} = \frac{14}{18} - \frac{9}{18} = \frac{5}{18}$$

a. $\frac{3}{4} - \frac{2}{3}$

c. $\frac{5}{12} - \frac{1}{4}$

b. $\frac{5}{6} - \frac{1}{8}$

d. $\frac{6}{7} - \frac{3}{5}$

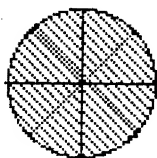
3. Gul Padshah Alfat's picture covered a $\frac{1}{4}$ of the page in a reading book. A second picture covered $\frac{3}{4}$ of the page. How much greater was the fraction of the page taken up by the second picture?

4. In a science experiment a sunflower grew $\frac{2}{5}$ cm in one week. The maize plant grew $\frac{9}{10}$ cm in one week. How much longer did the maize grow than the sunflower.

Objective: Review of subtraction of mixed numbers.

Study

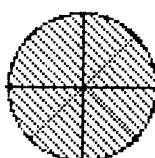
To subtract mixed numbers, we first subtract the fractions and then the whole numbers.



$$1\frac{4}{8}$$



-



$$1\frac{1}{8}$$

=

$$\frac{3}{8}$$

First: $\frac{4}{8} - \frac{1}{8} = \frac{3}{8}$

Next: $1 - 1 = 0$ Then the answer is $\frac{3}{8}$

To subtract unlike fractions, which have a different denominator we must first rewrite the fractions, so that they have a common denominator. Then we can subtract.

$$5\frac{3}{4} - 3\frac{5}{8}$$

Frist: $\frac{3}{4} - \frac{5}{8} = \frac{(8-4) \times 3}{8} = \frac{(8-8) \times 5}{8}$

$$= \frac{2 \times 3}{8} - \frac{1 \times 5}{8} = \frac{6-5}{8} = \frac{1}{8}$$

Second: $5 - 3 = 2$

The answer is $2\frac{1}{8}$

Practice

1. Subtract.

Example: $2\frac{5}{8} - 1\frac{2}{8}$

Frist: $\frac{5}{8} - \frac{2}{8} = \frac{5-2}{8} = \frac{3}{8}$

Second: $2 - 1 = 1$

The answer is $1\frac{3}{8}$

$$a. \quad 4 \frac{9}{10} - 2 \frac{6}{10}$$

$$c. \quad 10 \frac{1}{2} - 8 \frac{6}{12}$$

$$b. \quad 6 \frac{7}{9} - 3 \frac{4}{9}$$

$$d. \quad 9 \frac{7}{10} - 8 \frac{6}{10}$$

2. Subtract.

$$\text{Example: } 3 \frac{1}{2} - 2 \frac{3}{8}$$

$$\text{First: } \frac{1}{2} - \frac{3}{8} = \frac{4-3}{8} = \frac{1}{8}$$

$$\text{Second: } 3 - 2 = 1$$

$$\text{The answer is } 1 \frac{1}{8}$$

$$a. \quad 4 \frac{5}{8} - 1 \frac{1}{2}$$

$$b. \quad 3 \frac{3}{7} - 1 \frac{2}{9}$$

$$c. \quad 3 \frac{4}{3} - 2 \frac{3}{4}$$

$$d. \quad 5 \frac{5}{6} - 2 \frac{2}{3}$$

3. Muhajera bought $6 \frac{1}{2}$ m cloth, she used $4 \frac{3}{4}$ m of this cloth for her dress. How much cloth is left?

4. Zaker has $3 \frac{3}{4}$ sheets of colour paper for making a kite. He used $1 \frac{2}{3}$ of this colour paper to make a kite. How much colour paper is left?

Objective: Review of subtraction of mixed fractions with unlike denominator (Regrouping and borrowing).

Study

a. $3\frac{1}{3} - 1\frac{3}{4}$

First we write the fractions with a common denominator

$$\frac{1}{3} - \frac{3}{4} = \frac{4}{12} - \frac{9}{12}$$

We can't subtract!

To subtract we need to borrow.

Here we borrow from the whole number.

$$\begin{array}{r} 2 \\ \cancel{3} \end{array} 1 \frac{12}{12}$$

We add this to the fraction part of our minuend.

$$\frac{4}{12} + \frac{12}{12} = \frac{16}{12}$$

Now we can subtract our fractions.

$$\frac{16}{12} - \frac{9}{12} = \frac{7}{12}$$

Next, we subtract our whole numbers remembering that the whole number is now 2, not 3.

$$\begin{array}{r} 2 \\ \cancel{3} \end{array} - 1 = 1 + \frac{7}{12} = 1\frac{7}{12} = \boxed{1\frac{7}{12}}$$

b. We can also solve subtraction sums involving mixed numbers by regrouping.

$$3\frac{2}{5} - 1\frac{3}{4}$$

First we change our mixed numbers into irrational fractions.

$$\frac{17}{5} - \frac{7}{4} = \frac{68}{20} - \frac{35}{20} = \frac{33}{20}$$

Then we change our answer back into mixed numbers.

$$\frac{33}{20} = 1\frac{13}{20}$$

Practice

1. Subtract.

a. $5 \frac{2}{5} - 1 \frac{7}{10}$

c. $6 \frac{1}{2} - 4 \frac{3}{5}$

b. $2 \frac{1}{4} - 1 \frac{2}{3}$

d. $8 \frac{1}{3} - 2 \frac{1}{4}$

2. Subtract by changing mixed numbers to irrational fractions.

a. $5 \frac{2}{3} - 2 \frac{3}{10}$

b. $8 \frac{1}{4} - 5 \frac{2}{3}$

c. $9 \frac{1}{5} - 4 \frac{3}{4}$

d. $7 \frac{2}{5} - 3 \frac{2}{3}$

3. On Monday morning Sajida buys $8 \frac{1}{2}$ kg potatoes by Friday morning only $1 \frac{3}{4}$ kg are left. How much has Sajida s family eaten?

4. At the start of a journey, Mr. Salam has $32 \frac{1}{5}$ litter of petrol in his car. By the time he reaches his destination only $5 \frac{3}{7}$ litter were left. How much petrol has the car used up?

Objective: Review of subtraction and addition of fractions.

Study

Rashid went to school $4\frac{1}{2}$ km yesterday. His pen was lost during this journey. He returned back to search for his pen. He found the pen when he had gone $2\frac{3}{4}$ km. Then he went back to his school walk $4\frac{1}{5}$ km. What is the distance between his house and school?

$$4\frac{1}{2} + 4\frac{1}{5} = \frac{9}{2} + \frac{21}{5} = \frac{45}{10} + \frac{42}{10} = \frac{87}{10}$$

$$\frac{87}{10} - 2\frac{3}{4} = \frac{87}{10} - \frac{11}{4} = \frac{174}{20} - \frac{55}{20} = \frac{119}{20} = 5\frac{19}{20} \text{ km}$$

Practice

1. Solve.

a. $6\frac{1}{2} - 5\frac{3}{4}$

d. $8\frac{1}{3} - 2\frac{3}{4}$

b. $6\frac{3}{7} - 2\frac{3}{5}$

e. $6\frac{1}{2} - 2\frac{2}{5}$

c. $7\frac{1}{2} - 3\frac{6}{7}$

f. $8\frac{4}{9} - 2\frac{1}{2}$

2. Sarwar has $6\frac{2}{3}$ kg wheat flour at home, $5\frac{1}{4}$ kg of this flour is been consumed. He bought $2\frac{1}{2}$ kg more wheat flour. How much wheat flour now does she have?

3. Qader travelled $13\frac{3}{5}$ km on his journey by foot and by car. He travelled $5\frac{1}{10}$ km by foot, how far did he travel by car?

Objective: Assessment of subtraction & addition of rational and irrational fractions & mixed numbers.

1. Match the problem to the correct answer.

a. $\frac{5}{8} - \frac{2}{8}$

$1\frac{2}{4}$

b. $\frac{1}{2} - \frac{1}{3}$

$\frac{45}{56}$

c. $3\frac{1}{4} - 1\frac{5}{6}$

$\frac{1}{6}$

d. $2\frac{3}{4} - 1\frac{1}{4}$

$1\frac{11}{15}$

e. $2\frac{3}{7} - 1\frac{5}{8}$

$1\frac{5}{12}$

f. $4\frac{2}{5} - 2\frac{2}{3}$

$\frac{3}{8}$

2. Solve.

a. $5\frac{1}{2} - 4\frac{3}{7}$

b. $6\frac{3}{5} - 2\frac{1}{2}$

c. $8\frac{1}{2} - 3\frac{1}{4}$

d. $9\frac{1}{7} - 2\frac{5}{7}$

3. There are $6\frac{1}{2}$ ton wheat flour in a store. $3\frac{2}{5}$ ton is given to a hostel at a school. How many tons of wheat flour is left in the store?

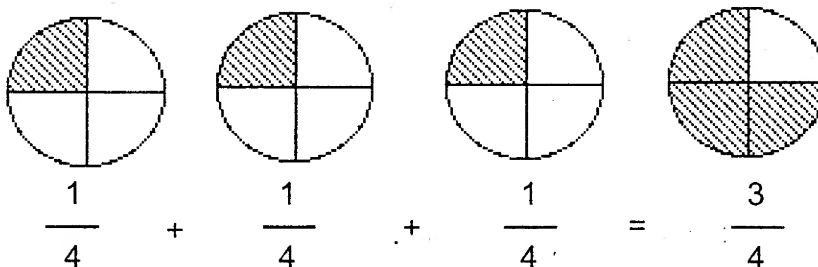
4. A farmer had planted $5\frac{3}{5}$ jeribs of his cotton field $2\frac{1}{2}$ jerib of the field did not give any product. Then he planted $2\frac{1}{5}$ jeribs of his field again. How many jeribs of his field will have product?

Objective: Review of multiplication of fraction with the whole numbers.

Study

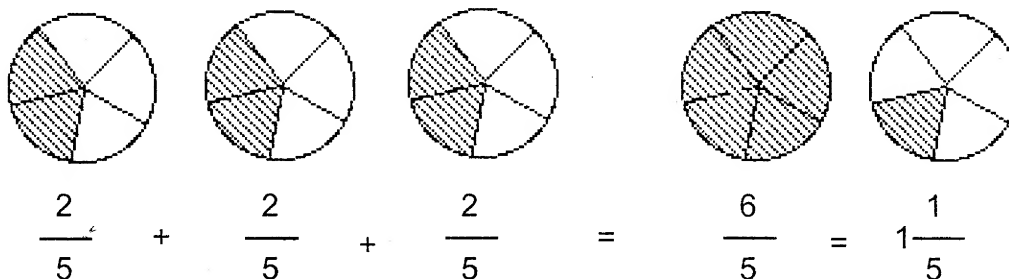
To multiply a fraction with a whole number we multiply the numerator by the whole number.

$$\frac{1}{4} \times 3$$



We can write our sum thus: $\frac{1 \times 3}{4} = \frac{3}{4}$

$$\frac{2}{5} \times 3$$



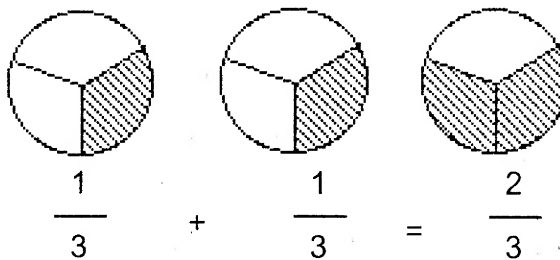
Instead of adding we can solve our sum by multiplying of numerator by numerator and denominator by denominator.

$$\frac{2}{5} \times \frac{3}{1} = \frac{2 \times 3}{5} = \frac{6}{5} = 1\frac{1}{5}$$

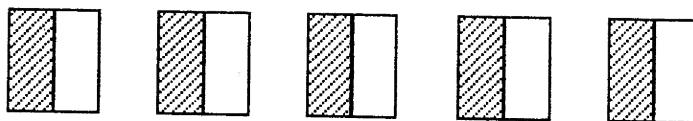
Practice

1. Complete these sums by repeating addition.

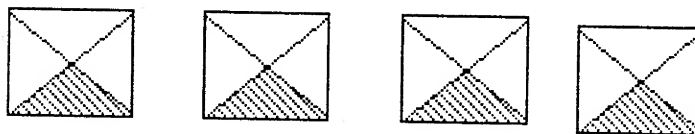
Example: $\frac{1}{3} \times 2$



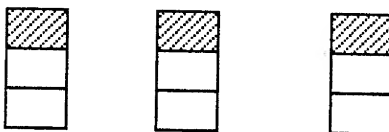
a. $\frac{1}{2} \times 5$



b. $\frac{1}{4} \times 4$



c. $\frac{1}{3} \times 3$



d. $\frac{5}{1} \times \frac{3}{4}$



2. Solve, using multiplication.

Example: $\frac{3}{7} \times \frac{2}{1} = \frac{3 \times 2}{7} = \frac{6}{7}$

a. $\frac{2}{3} \times \frac{4}{1}$

c. $\frac{5}{8} \times \frac{5}{1}$

b. $\frac{3}{4} \times \frac{3}{1}$

d. $\frac{7}{1} \times \frac{1}{6}$

3. Solve.

Example: $\frac{1}{2}$ of hour = 30 minutes.

$\frac{1}{2} \times \frac{60}{1} = \frac{60}{2} = 30$ minutes

a. 1 dozen = 12

c. 1 foot = 12 inches

e. 1 meter = 100 cm

$\frac{3}{4}$ of dozen =

$\frac{2}{3}$ of foot = inches

$\frac{3}{4}$ m = cm

b. $\frac{3}{4}$ of 405

d. $\frac{1}{8}$ of 1296

4. Jamila decided to make covers for some Holy Quran. If $\frac{1}{3}$ m cloth is needed for making one cover, how much cloth is needed for making of 8 covers?

5. There are 6 people working in a carpet weaving industry. If each person could weave $\frac{2}{3}$ m² per month, how much carpet has been weaved in a month?

4. Put the numbers in order from biggest to smallest.

20004, 35001, 20604, 46000

5. Put the numbers in order from smallest to biggest.

60001, 90500, 82000, 35600

6. Ahmad has three notes of Afg. 10,000, five notes of 1000 and four notes of Afg. 100.
Write the total money Ahmad has.

Objective: Review of multiplication of fractions.

Study

$$\frac{2}{3} \times \frac{5}{6}$$

The answer is $\frac{2}{3}$ of $\frac{5}{6}$

To multiply two fractions, multiply the numerator by numerator and denominator by the denominator.

$$\frac{2}{3} \times \frac{5}{6}$$

In multiplication we can cancel numerators with denominator

$$\frac{2}{3} \times \frac{5}{6} = \frac{\overset{1}{\cancel{2}} \times 5}{3 \times \underset{3}{\cancel{6}}} = \frac{5}{9}$$

Practice

1. Find the product.

Example

$$\frac{1}{5} \text{ of } \frac{1}{2} = \frac{1 \times 1}{5 \times 2} = \frac{1}{10}$$

a. $\frac{3}{4}$ of $\frac{1}{2}$

e. $\frac{1}{9} \times \frac{2}{3}$

b. $\frac{1}{4}$ of $\frac{1}{3}$

f. $\frac{3}{4} \times \frac{2}{3}$

c. $\frac{1}{2}$ of $\frac{1}{3}$

g. $\frac{2}{3} \times \frac{4}{5}$

d. $\frac{1}{2}$ of $\frac{1}{4}$

h. $\frac{3}{5} \times \frac{1}{6}$

2. Find the product, using multiplication.

Example: $\frac{1}{10} \times \frac{4}{7}$

$$= \frac{1 \times 4}{10 \times 7} = \frac{1 \times 2}{5 \times 7} = \frac{2}{35}$$

a. $\frac{1}{9} \times \frac{2}{3}$

c. $\frac{2}{3} \times \frac{4}{5}$

b. $\frac{3}{4} \times \frac{2}{3}$

d. $\frac{3}{5} \times \frac{1}{6}$

3. Naeem has eaten $\frac{2}{3}$ of a half of a water melon. How much of a water melon has he eaten?

4. A farmer has planted $\frac{3}{4}$ parts of $\frac{2}{3}$ of his field. How much of his field has been planted?

Objective: Review of multiplication of mixed numbers.

Study

To multiply, we change the mixed number into an irrational fraction.

$$1\frac{2}{3} \times 2$$

Remember $1 = \frac{3}{3}$

$$\begin{aligned} \frac{5}{3} \times 2 &= \frac{5 \times 2}{3} \\ &= \frac{10}{3} \\ &= 3\frac{1}{3} \end{aligned}$$

$$1\frac{4}{5} \times \frac{2}{3}$$

Remember $1 = \frac{5}{5}$

$$\begin{aligned} \frac{9}{5} \times \frac{2}{3} &= \frac{\cancel{3}^3 \times 2}{5 \times \cancel{3}_1} = \frac{6}{5} = 1\frac{1}{5} \end{aligned}$$

Practice

1. Multiply

Example $2 \times 2\frac{1}{4} = \frac{2}{1} \times \frac{9}{4} = \frac{\cancel{2}^1 \times 9}{1 \times \cancel{4}_2} = \frac{9}{2} = 4\frac{1}{2}$

a. $2\frac{2}{5} \times 3$

c. $3\frac{3}{8} \times 6$

b. $5 \times 4\frac{1}{8}$

d. $4 \times 2\frac{9}{10}$

2. Multiply
Example

$$2 \frac{2}{3} \times \frac{1}{4} = \frac{8}{3} \times \frac{1}{4}$$

$$= \frac{\cancel{8}^2 \times 1}{3 \times \cancel{4}_1} = \frac{2}{3}$$

a. $1 \frac{5}{9} \times \frac{1}{2}$

c. $\frac{2}{3} \times 3 \frac{3}{7}$

b. $\frac{7}{10} \times 1 \frac{2}{3}$

d. $\frac{1}{8} \times 4 \frac{2}{5}$

3. Multiply.
Example:

$$4 \frac{1}{2} \times 2 \frac{2}{3}$$

$$= \frac{9}{2} \times \frac{8}{3} = \frac{\cancel{9}^3 \times \cancel{8}^4}{\cancel{2}_1 \times \cancel{3}_1} = \frac{12}{1} = 12$$

a. $4 \frac{1}{5} \times 2 \frac{2}{3}$

c. $7 \frac{1}{5} \times 2 \frac{5}{12}$

b. $2 \frac{4}{7} \times 4 \frac{5}{6}$

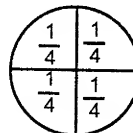
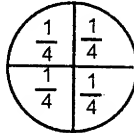
d. $2 \frac{5}{6} \times 5 \frac{2}{5}$

4. If the price of one meter cloth is Afg. 5 $\frac{1}{2}$, find the price of 3 meter cloth.
5. Zahida has sold 4 $\frac{1}{3}$ cake made by herself. If she has sold 1 cake with \$ 2 $\frac{2}{5}$, find the price of sold cake?
6. Chocolate cakes at the Pamir Restaurant each weighs 18 $\frac{1}{2}$ grams. If Asad eats $\frac{1}{2}$ cake, how many grams of cake has he eaten?

Objective: Review of division of fractions with the whole numbers.

Study the following.

a. $2 \frac{1}{4}$



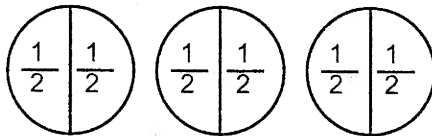
It means How many quarters make two whole?

The answer is 8 quarters. Also when we divide with fraction, we inverse the divisor (second fraction) and multiply.

$$\frac{2}{1} \div \frac{1}{4} = \frac{2}{1} \times \frac{4}{1} = \frac{2 \times 4}{1} = \frac{8}{1} = 8$$

Practice

1. Find.
Example:



How many $\frac{1}{2}$ s are in 3?

$$3 \div \frac{1}{2} = \frac{3}{1} \times \frac{2}{1} = \frac{3 \times 2}{1} = \frac{6}{1} = 6$$

- a. How many $\frac{1}{6}$ s are in 2?

- b. How many $\frac{3}{4}$ s are in 3?

- c. How many $\frac{1}{8}$ s are in 4?

2. Divide.
Example:

$$2 \div \frac{1}{3} = \frac{2}{1} \times \frac{3}{1} = \frac{2 \times 3}{1} = \frac{6}{1} = 6$$

- a. $3 \frac{1}{4}$

b. $4 \frac{1}{5}$

c. $6 \frac{2}{5}$

d. $7 \frac{3}{4}$

3. Solve.

a. Nadia wants to make tablecloths, if she has 8 meter cloth, how many $\frac{1}{2}$ m tablecloth can she make?

b. How many $\frac{1}{4}$ parts can be made from 4 cake of cheese?

Objective: Review of dividing fractions by whole numbers.

Study the following.

$$\frac{1}{8} \quad 3$$

Here the divisor is a whole number. Remember a whole number has a denominator of 1 or $3 = \frac{3}{1}$. we are dividing $\frac{1}{8}$ three times.

$$\frac{1}{8} \quad 3 = \frac{1}{24}$$

We can solve this division problem:

$$\frac{1}{8} \quad \frac{3}{1}$$

We inverse the divisor and multiply the numerators and the denominators as follows.

$$\frac{1}{8} \quad \frac{3}{1} = \frac{1}{8} \times \frac{1}{3} = \boxed{\frac{1}{24}}$$

Practice

1. Match.

Example:

$$\frac{1}{3} \quad 2 = \frac{1}{3} \quad \frac{2}{1} = \frac{1}{3} \times \frac{1}{2} = \boxed{\frac{1}{6}}$$

a. $\frac{1}{5} \quad 4$

b. $\frac{1}{2} \quad 5$

c. $\frac{1}{6} \quad 8$

d. $\frac{1}{4} \quad 10$

a. $\frac{1}{20}$

b. $\frac{1}{48}$

c. $\frac{1}{40}$

d. $\frac{1}{10}$

e. $\frac{1}{6}$

2. Divide.

Example:

$$\frac{5}{6} \div 7 = \frac{5}{6} \div \frac{7}{1} = \frac{5}{6} \times \frac{1}{7} = \boxed{\frac{5}{42}}$$

a. $\frac{2}{9} \div 4$

b. $\frac{4}{7} \div 3$

c. $\frac{5}{9} \div 9$

d. $\frac{3}{5} \div 4$

3. Solve.

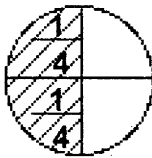
- a. Ahmad made 8 cards from $\frac{1}{2}$ parts of a chart paper. How many parts of paper is in each card?
- b. A mother has distributed $\frac{2}{3}$ of a loaf of a bread between her four children, find the amount of bread each child got.

Objective: Review division of a fraction by a fraction.

Study

$$\frac{1}{2} \div \frac{1}{4}$$

This means how many quarters are there in one half or how many quarters make one half? To solve the problem, verse the divisor and multiply.



$$\frac{1}{2} \div \frac{1}{4} = \frac{1}{2} \times \frac{4}{1} = \frac{1 \times 4}{2 \times 1} = \frac{2}{1} = 2$$

Practice

1. Solve by inverting the divisor.

Example: $\frac{1}{4} \div \frac{2}{3} = \frac{1}{4} \times \frac{3}{2} = \frac{1 \times 3}{4 \times 2} = \frac{3}{8}$

a. $\frac{1}{4} \div \frac{1}{2}$

b. $\frac{1}{3} \div \frac{1}{6}$

c. $\frac{2}{3} \div \frac{5}{9}$

d. $\frac{1}{2} \div \frac{2}{5}$

e. $\frac{4}{9} \div \frac{1}{2}$

2. How many quarters make three - quarters?

3. How many thirds make one half?

4. How many eights make on third?

Objective: Review division of mixed numbers.

Study

To divide mixed numbers, change the mixed numbers into an irrational fraction and divide as follows:

$$\begin{aligned}
 \text{a. } 9\frac{1}{2} \div 3 &= \frac{19}{2} \div \frac{3}{1} = \frac{19}{2} \times \frac{1}{3} \\
 &= \frac{19}{2} \times \frac{1}{3} = \frac{19 \times 1}{2 \times 3} \\
 &= \frac{19}{6} = 3\frac{1}{6}
 \end{aligned}$$

$$\begin{aligned}
 \text{b. } 4\frac{3}{4} \div 2\frac{2}{5} &= \frac{19}{4} \div \frac{12}{5} = \frac{19}{4} \times \frac{5}{12} \\
 &= \frac{95}{48} = 1\frac{47}{48}
 \end{aligned}$$

Sometimes, we may be able to cancel

$$\begin{aligned}
 \text{c. } 3\frac{2}{3} \div \frac{5}{3} &= \frac{11}{3} \div \frac{5}{3} = \frac{11}{3} \times \frac{3}{5} \\
 &= \frac{11 \times \overset{1}{\cancel{3}}}{\underset{1}{\cancel{3}} \times 5} = \frac{11}{5} = 2\frac{1}{5}
 \end{aligned}$$

Objective: Review place value up to hundred thousands.

Study

h th	t th	th	h	t	u
4	2	4	3	5	0

o = ones
 t = tens
 h = hundreds
 th = thousands
 10 th = ten thousands
 100 th = hundred thousands

Practice

1. Arrange in decending order.

Example: 123911, 129340, 192340 192340, 129340, 123911

a. 156534, 456734, 156334 _____

b. 912767, 156336, 456734 _____

c. 953209, 953290, 953029 _____

2. Write in the expanded form.

Example: 250139 = 200000 + 50000 + 100 + 30 + 9

a. 600545, _____

b. 873122, _____

c. 982094 _____

3. Write the numbers and circle the correct digit.

Example: 9 in the 1000 place 1 8 9 9 1

a. One is in the 10,000 place _____

b. Two is in the 1000 place _____

c. Six is in the 10,000 place. _____

Practice

1. Divide these mixed numbers.

a. $8\frac{3}{5} \div 5$

b. $12 \div 3\frac{4}{5}$

c. $3\frac{6}{7} \div 2\frac{1}{7}$

d. $16 \div 4\frac{3}{4}$

e. $9 \div 2\frac{3}{4}$

f. $9 \div 3\frac{5}{8}$

2. A piece of ribbon is $5\frac{3}{5}$ meter long, if it is cut into fourteen equal pieces, how long will each piece be? Write your answer in fraction.
3. In a Spinghar restaurant a pancake takes just $2\frac{1}{4}$ of a minute to cook. How many pancakes can be cooked in the space of $1\frac{1}{2}$ hours of non - stop work?
4. A pile of math text books on Mr. Hussain s table is exactly $14\frac{2}{5}$ cm high. If each book is $1\frac{1}{5}$ cm thick, how many books are in the pile?

Objective: Assessment of multiplication and division of fraction.

1. Multiply

a. $5 \times \frac{1}{2}$

d. $\frac{1}{5} \times 2\frac{1}{2}$

b. $\frac{3}{4} \times 3$

e. $2\frac{3}{7} \times 4\frac{4}{5}$

c. $\frac{1}{2} \times \frac{2}{3}$

f. $2\frac{1}{2} \times 4$

2. Divide.

a. $7 \frac{1}{8}$

d. $2\frac{1}{2} \div 7\frac{3}{9}$

b. $\frac{1}{2} \div 4$

e. $8 \div 2\frac{3}{5}$

c. $\frac{2}{3} \div \frac{3}{7}$

f. $4\frac{1}{3} \div 5$

3. In a class of 44 pupils $\frac{3}{4}$ are girls. How many boys are in the class?
4. On a farm, $\frac{2}{3}$ of the land is used for growing vegetables. Space fingers are grown on $\frac{1}{4}$ of this portion. What fraction of the total farm area is devoted to space - fingers.
5. The race track in a city stadium is $1\frac{7}{8}$ km long. If space walker manages to run round it. $4\frac{1}{3}$ times before collapsing, how many kilo meter has he run?
6. The product of two fractions is 9, if one of the fractions is $2\frac{1}{7}$, what is the other fraction?
7. Sultan walks at an average of $2\frac{1}{3}$ miles per hour. How long would it take him to make an $11\frac{9}{10}$ mile hike/

Objective: Identify decimal fractions (tenths).

Study

In the following figure see how decimal fraction are represented.

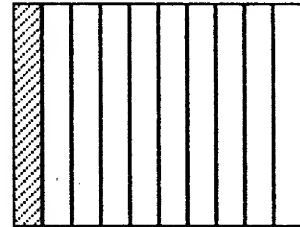
When we divide a whole number into 10 equal parts each of those parts is $\frac{1}{10}$.

We can write $\frac{1}{10}$ as a decimal fraction. The decimal fraction is written as 0.1

$$\frac{1}{10} = 0.1$$

$$10 \times 0.1 = 1.0 \text{ one whole}$$

$$10 \times \frac{1}{10} = 1 \text{ one whole}$$



Look at the following figure.



Here the coloured part of the shape is 4 out of ten or $\frac{4}{10}$. We write it in decimal 0.4

Practice

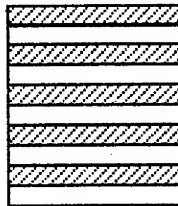
1. Write the coloured parts of the shapes as a fraction and as a decimal.

Example:



$$\frac{6}{10} = 0.6$$

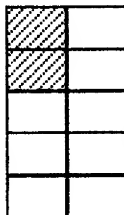
a.



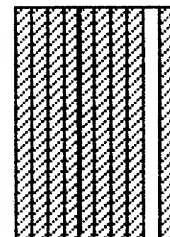
c.



b.



d.



2. Write these fractions as decimals.

Example: $\frac{6}{10} = 0.6$

a. $\frac{2}{10}$

b. $\frac{5}{10}$

c. $\frac{8}{10}$

d. $\frac{3}{10}$

e. $\frac{9}{10}$

f. $\frac{4}{10}$

Objective: Identify decimal fractions hundredths.

Study

When we divide a whole number into 100 equal parts each part is $\frac{1}{100}$.

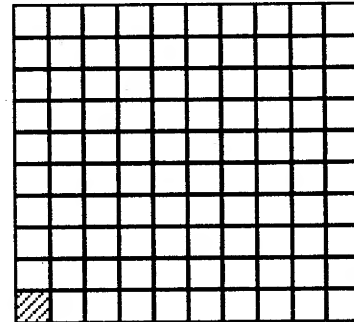
We can write $\frac{1}{100}$ as a decimal fraction.

The decimal fraction is written as 0.01.

$$\frac{1}{100} = 0.01$$

Now look at the table

	H	T	U	o	t	h
$\frac{1}{10}$			0	.	1	
$\frac{1}{100}$			0	.	0	1



$$100 \times \frac{1}{100} = 1 \text{ whole}$$

$$100 \times 0.01 = 1 \text{ whole}$$

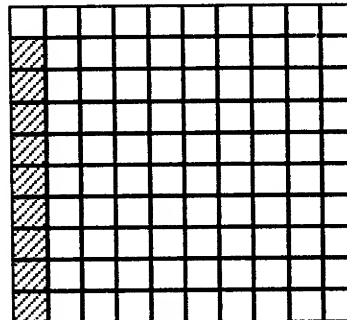
Remember to add the decimal point between unit and tenths to separate the whole number from the decimal parts.

Practice

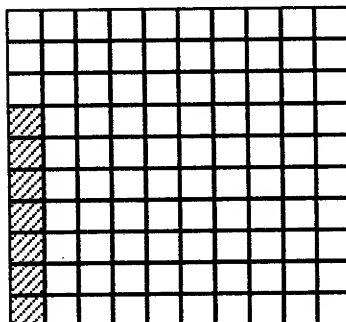
1. Write the coloured parts of the figures as a fraction and as a decimal.

Example:

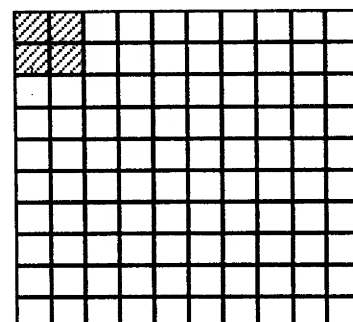
$$\frac{9}{100} = 0.09$$



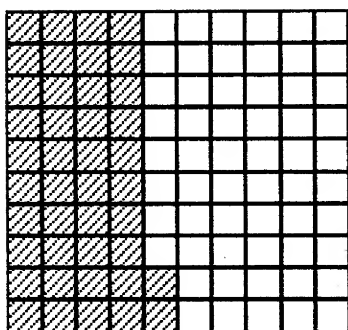
a.



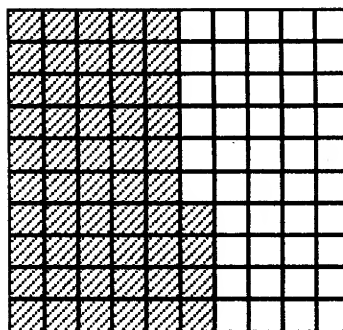
b.



c.



d.



2. Write these as decimals.

Example: $\frac{18}{100} = 0.18$

a. $\frac{7}{100}$

c. $\frac{23}{100}$

b. $\frac{46}{100}$

d. $\frac{97}{100}$

3. Write the numbers in the chart below and read them.

Example: 0.45 read as zero point four-five.

	H	T	U	Decimal Point	t	h
0.45			0		4	5

a. 0.04

b. 0.14

c. 0.02

4. Compare, using < > or =.

Example: 0.2 0.02

a. 0.05 0.5

c. 0.15 0.21

b. 0.19 0.91

d. 0.08 0.80

Objective: Identify of decimal fractions (thousands).

Study

When we divide a whole number into 1000 equal parts, each part is $\frac{1}{1000}$.

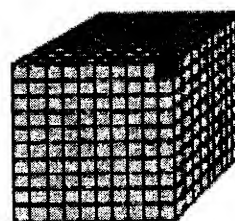
We can write $\frac{1}{1000}$ as a decimal fraction. The decimal fraction is written as 0.001

$$0.001 = \frac{1}{1000}$$

$$\frac{1}{1000} \times 1000 = 1 \text{ whole}$$

$$0.001 \times 1000 = 1 \text{ whole}$$

$$\frac{91}{1000} = 0.091$$



	H	T	U	.	t	h	th
$\frac{91}{1000}$			0	.	0	9	1

Practice

1. Match the fractions.

Example: $\frac{5}{1000}$ 0.252

a. $\frac{275}{1000}$ 0.052

b. $\frac{25}{1000}$ 0.005

c. $\frac{252}{1000}$ 0.035

d. $\frac{35}{1000}$ 0.275

2. Write the number in the chart below and read it to a friend.

Example: 0.016 Zero point zero, one, six.

	H	T	U	.	t	h	th
0.016			0	.	0	1	6

a. 0.428

b. 0.019

c. 0.998

d. 0.002

3. Compare, using < > or =.

Example: 0.75 0.075

a. 0.025 0.255

c. 0.04 0.004

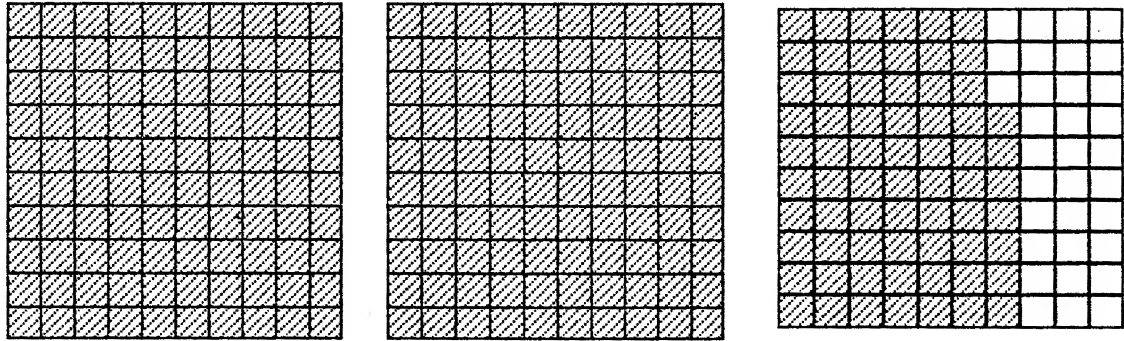
b. 0.411 0.91

d. 0.007 0.07

Objective: Identify decimal fractions.

Study

The decimal point separates whole numbers from decimal fraction.



The shaded part of the figure shows 2 ones and 67 hundredths.

ones	decimal point	tenths	hundredths
2	.	6	7

As a mixed number

$$2 \frac{67}{100}$$

As a decimal fractions

2.67

The number is 2 and sixty-seven hundredths.

Practice

1. Write the decimal.

Example: One and fifty hundredths

1.50

- Sixteen and sixty three hundredths
- Five and forty seven thousandths
- Two and five tenths

2. Write the numbers in chart and read them to a friend.

Example: 3.25, is three and twenty five hundredths

Tens	ones	decimal point	tenths	hundredths	thousands
	3	.	2	5	

a. 4.005

b. 12.270

c. 2.75

d. 2.065

3. Compare, using $<$ $>$ or $=$.

Example: 2.75 $>$ 2.075

a. 3.095 \square 3.095

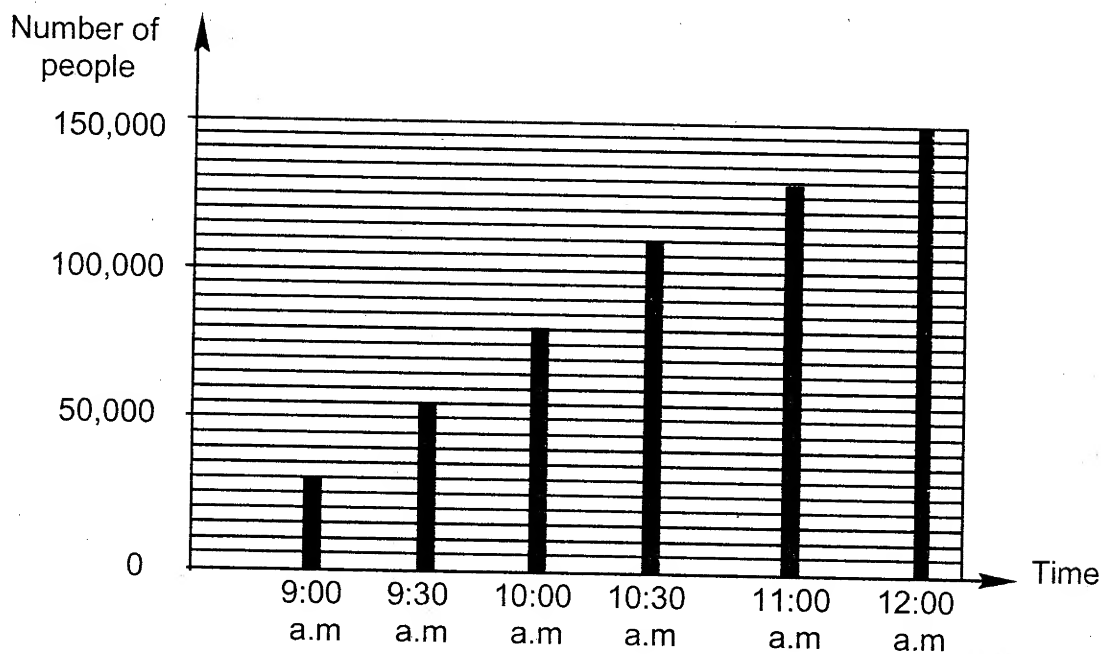
d. 4.5 \square 4.500

b. 5.3 \square 5.030

e. 9.35 \square 9.53

c. 1.225 \square 2.25

4. This line graph tells us about people arriving at Kabul Ghazi Stadium to watch a Buzkashi match between Faryab and Balkh.



Now answer these questions.

Example: How many people had arrived in the stadium by 9:00 a.m? 30,000

- How many people were in the stadium at 9:30 a.m?
- When the match started at 10:00 a.m, how many people were watching?
- How many people arrived in the stadium between 10:00 a.m and 11:00 a.m?
- How many people were in the stadium when play stopped at noon for lunch?

Objective: Review of decimal fractions (tenths, hundredths and thousands).

Study

The decimal point separates whole number from decimal fractions, we write the following numbers in the chart below. translating

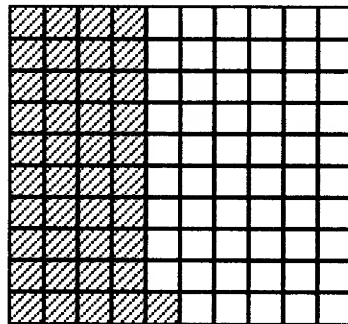
0.7 0.75 0.075 20.075

H	T	U	Decimal Point	t	h	Thousandths
		0	.	7		
		0	.	7	5	
		0	.	0	7	5
	2	0	.	0	7	5

Practice

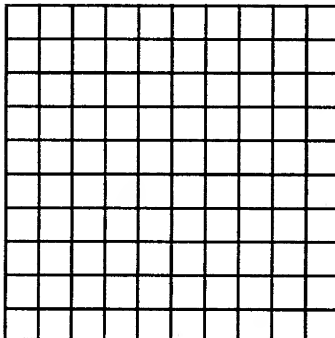
1. Colour squares to show the fraction, then write in decimal form.

Example:



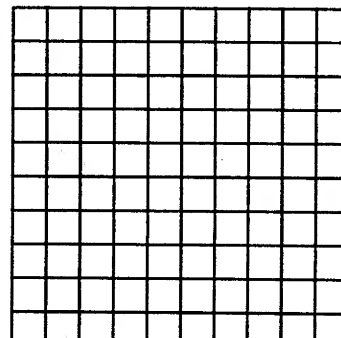
$$\frac{41}{100} = 0.41$$

a.



$$\frac{7}{100}$$

b.



$$\frac{15}{100}$$

2. Write the numbers in the chart below and read them to a friend.

Example: 0.25 Zero point twenty fifths.

- a. 1.5 b. 0.221 c. 0.411 d. 1.005 e. 0.075

Hundreds	Tens	Ones	Pecimal points	tenths	hundreds	thousands
		0	.	2	5	

3. Change these numbers to fractions and decimal fractions.

Example: $6 \frac{6}{10} = \frac{66}{100} = 0.66$

a. $7 \frac{10}{100}$

d. $14 \frac{10}{100}$

b. $8 \frac{100}{1000}$

e. $12 \frac{100}{1000}$

c. $9 \frac{1000}{10000}$

4. Write the decimal

Example: three hundred thirty five thousandths.

$$\frac{335}{1000} = 0.335$$

a. one and one hundred two thousandths

b. fifty four thousandths

c. seventy five hundredths

d. three and six thousandths

Objective: Assessment of decimal fractions (tenths, hundredths and thousandths)

1. Match.

one and twenty four hundredths.

0.28

seven tenths.

0.006

twenty eight hundredths

0.261

six thousandths.

1.24

two hundred sixty one thousandths.

0.7

2. Write the numbers in the chart and read them.

a. 4.127

b. 0.021

c. 0.002

d. 5.012

H	T	U	Decimal Point	t	h	th

3. Compare, using $<$ $>$ or $=$.

a. 0.37 ☐ 0.73

d. 0.9 ☐ 0.090

b. 4.526 ☐ $4\frac{1}{526}$

e. 0.007 ☐ 0.07

c. $\frac{4}{10}$ ☐ 0.40

Objective: Round off to the nearest whole.

Study

To rounding off a decimal fraction to the nearest whole, we look first at the tenths. If there are 5 or more than 5 tenths then we add 1 to the whole if number there are fewer than 5 tenths consider it as a zero.

For example:

The accurate estimated weight of the following items:

Item	Weight estimated		Weight
Sugar	3.4 kg	————→	3.0 kg
Rice	4.6 kg	————→	5.0 kg
Potato	5.2 kg	————→	5.0 kg
Tomato	7.8 kg	————→	8.0 kg

Practice

1. Round to the nearest whole number.

Example: 7.8 —————→ 8

- | | |
|---------|---------|
| a. 8.4 | e. 9.6 |
| b. 11.5 | f. 12.6 |
| c. 14.3 | g. 23.7 |
| d. 12.6 | h. 1.2 |

Objective: Round off to the decimal (tenths).

Study

To rounding off a decimal fraction to the nearest tenth, we look first at the hundredths, if the number in this place is 5 or more than 5, we add 1 to the tenth. If the number less than 5, we consider it as a zero.

See the example below:

Sultan was able to estimate his total expenses by rounding off each item of purchases to the nearest tenth of tenths of Afghan.

<u>Lucky Store</u>		
Customer: Sultan		
Item	Afg	
Flour	23.6⑨	→ 23.70
Sugar	36.4②	→ 36.40
Pepper	5.7④	→ 5.70
Coffee	70.3⑧	→ 70.40
Total	**	136.20

The exact estimate is 136 Afg.

Practice

1. Round off to the nearest tenth.

Example: $0.4\textcircled{7} \rightarrow 0.5$

4.73 2.69

42.81 3.86

11.07 9.52

6.67 8.47

1.17

2. Find the accurate estimate of the following bill.

<u>Afghan Store</u>	
Customer: Naeem	
Item	Afg
Cookies	27.4⑧
Black tea	75.2⑥
Sugar	22.1⑧
Milk	15.7⑤
Toast	<u>17.0 9</u>
Total	****

Objective: Round to the decimal (hundredths).

Study

For rounding off to decimal (hundredths), we look at the thousands if the number in this place is 5 or more than 5, we add to the hundredths. If it is less than 5 we consider it as a zero.

Study the example below:

Less than 5
 $27.35\textcircled{1} \longrightarrow 27.35$

More than 5
 $24.66\textcircled{7} \longrightarrow 24.67$

It is 5
 $0.48\textcircled{5} \longrightarrow 0.49$

Practice

1. Round off to the nearest hundredths.

Example: $9.84\textcircled{6} \longrightarrow 9.85$

- | | |
|----------|----------|
| a. 2.857 | e. 9.458 |
| b. 3.405 | f. 7.304 |
| c. 2.006 | g. 5.955 |
| d. 8.233 | |

2. Round off these numbers.

Example: $0.22\textcircled{3} \longrightarrow 0.22$

- a. 0.22 4
- b. 0.22 6
- c. 0.22 8
- d. 0.22 5
- e. 0.22 1

Objective: Add decimals.

Study

To add decimal fractions, place numbers in each decimal place under each other, and add.

Study the example:

whole number	Decimal Point	tenths	hundredths
0	.	7	5
1	.	0	5

$$\begin{array}{r}
 0.75 \\
 + 1.05 \\
 \hline
 1.80
 \end{array}$$

If some decimal places have no numbers we put zeros in the empty places to keep numbers in the correct columns.

whole number	Decimal Point	tenths	hundredths	thousandths
2	.	6	5	
4	.	5		
6	.	2	6	5

$$\begin{array}{r}
 \textcircled{1} \quad \quad \textcircled{1} \\
 2.650 \\
 + 4.500 \\
 + 6.265 \\
 \hline
 13.415
 \end{array}$$

Practice

1. Add the numbers in the table.

	H	tens	ones	Decimal Point	tenths	hundredths	thousandths	Sum
+			6 4	.	2 9	8 7		
								11.25
+	1 2	4 3	2 8	.	9 6			
+			8 4	.	6 2	9 1		
+	1 2	6 3	4 8	.	4 1	5	2	

2. Add and round off the decimal fraction to the nearest tenth.

Example: $15.43 + 27.07 + 83.54$

		①	①		①	
		1	5	.	4	3
		2	7	.	0	7
+		8	3	.	5	4
<hr/>						
		1	2	6	.	0 4

The answer is 126.04 \longrightarrow 126.0

- a. $5.25 + 2.07 + 14.275$

- c. $9.745 + 3.006 + 5.213$

- b. $7.8 + 9.021 + 10.232$

- d. $4.5 + 7.2 + 3.29$

3. Two brothers Akram and Karim are studying in school. Karim studies in the morning and Akram studies in the afternoon. Each day Akram walks 2.51 km to school with Karim who walks 3.75 km first to Akram s house. Find the distance from Karim s house to school.
4. An NGO and community constructed a school building for the village children. The NGO paid Afg. 250,925.24 and the community did Afg 361,211.75 of construction work. Find the total expenditure.

Objective: Add of decimals with rounding off.

Study

Round off the decimal to the nearest tenth and add.

$$2.57 + 3.15 \longrightarrow 2.6 + 3.2$$

$$\begin{array}{r} 2.6 \\ + 3.2 \\ \hline 6.8 \end{array}$$

The answer is 6.8

Add and round off the answer to the nearest whole number.

$$4.27 + 2.5051 + 5.3$$

$$\begin{array}{r} 4.270 \\ + 2.051 \\ + 5.300 \\ \hline 11.621 \end{array}$$

The answer is 11.621 \longrightarrow 12

Practice

1. Round off the decimals to the nearest tenth and add.

Example: $27.86 + 7.75 + 5.22$

First round off: $27.9 + 7.8 + 5.2$

$$\begin{array}{r} \textcircled{2} \quad \textcircled{1} \\ 27.9 \\ + 7.8 \\ + 5.2 \\ \hline 40.9 \end{array}$$

- $10.06 + 7.05 + 205.86$
- $10.049 + 3.117 + 8.632$
- $28.032 + 14.595 + 29.72$

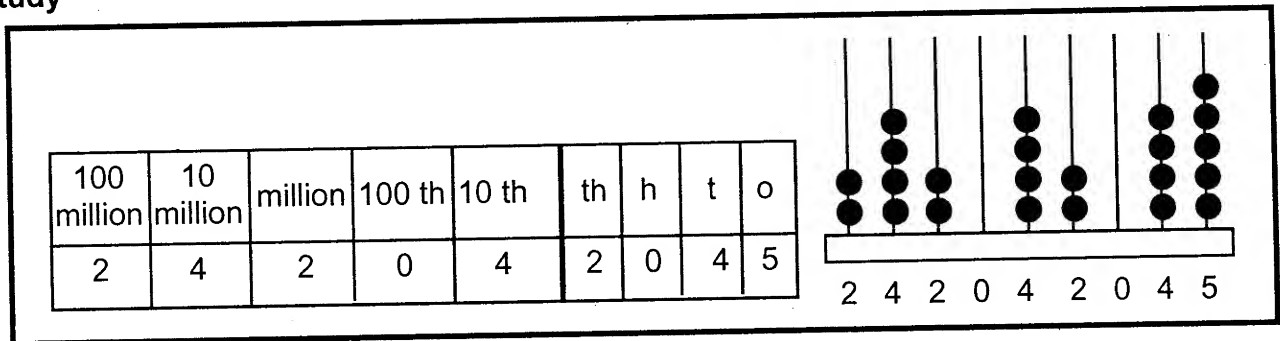
2. Find the total purchase and round off the total to the nearest tenth.

<u>Customer</u>	<u>Nabi</u>
Item	cost
Clock	50.09
Table	47.24
Pen	1.37
Ink	2.54
Total	* * * *

3. Hamida bought 3.25 meter cloth for making a dress, but it was not enough and she has to buy 1.05 meter cloth more. Find the total amount of cloth she needs for making her dress. Round the answer to a whole number.

Objective: Review place value up to millions.

Study



Practice

1. Write the place value of 7 in the following numbers.

Example: 67234658 7,000,000

- 423874320
- 723853434
- 57853754

2. Write the numbers that match these expanded form:

Example: $200000000 + 80000000 + 400 + 15 = 280000415$

- $440000000 + 6000000 + 300 + 12$ _____
- $900000000 + 50000 + 700 + 50$ _____
- $8000000 + 600000 + 5000 + 200$ _____

3. Arrange in ascending order.

Example: 95858450, 84485605, 94565800 84485605, 98565800, 95858450

- 36745670 89583670 45756500 _____
- 78374598 37458500 974537450 _____

4. There is more than one answer to the following questions.

- Write three pairs of eight digit numbers so that one is exactly one million less than other.

Example: 82624500 and 81624500, 56255300 and 55255300, 74100000 and 73100000

- Write two pairs of nine digit numbers so that one is exactly. 50,000,000 more than the other.

Example: 735,367,255 and 785,367,255 925,674,280 and 275,674,280

Objective: Subtract decimals without rounding off.

Study

To subtract decimal fractions, place the numbers in each decimal place under each other and subtract.

Study the examples:

Tens	Ones	Decimal Point	tenths	hundredths
	1	.	5	
	0	.	3	

$$\begin{array}{r}
 1 \ . \ 5 \\
 - \ 0 \ . \ 3 \\
 \hline
 1 \ . \ 2
 \end{array}$$

Where a decimal place has no number we put a zero in the empty place to make subtraction easier.

H	T	Ones	Decimal Point	tenths	hundredths	thousandths
		8	.	7	5	
		6	.	4	5	2

$$\begin{array}{r}
 \begin{array}{ccccccc}
 & & & & \textcircled{14} & & \textcircled{10} \\
 & & & & \cancel{4} & & \cancel{0} \\
 & & 6 & & \cancel{4} & & \cancel{0} \\
 8 & . & \cancel{7} & & \cancel{5} & & 2
 \end{array} \\
 - \quad 6 \ . \ 4 \ 5 \ 2 \\
 \hline
 2 \ . \ 2 \ 9 \ 8
 \end{array}$$

Practice

1. Subtract the numbers in the table.

	Tens	Ones	Decimal Point	tenths	hundredths	thousandths	Sum
-		9 6	. .	7 2	4 5	2	3.488
-		8 4	. .	7 3	4 5	5 9	
-	3 2	4 3	. .	5 8	7 4		
-	7 2	5 3	. .	2 9	6		
-	1	2 9	. .	1 4	7 9	6	

2. Subtract

Example: $19.055 - 4.41$

$$\begin{array}{r}
 \begin{array}{ccccccc}
 & 8 & & 10 & & & \\
 1 & \cancel{0} & . & \cancel{0} & 5 & 5 & \\
 - & 6 & 4 & . & 4 & 1 & 0 \\
 \hline
 1 & 4 & . & 6 & 4 & 5 &
 \end{array}
 \end{array}$$

a. $12.4 - 10.66$

c. $12.89 - 10.98$

b. $19.89 - 4.52$

d. $39.06 - 9.95$

3. A shopkeeper bought 13.75 kg sugar. He sells 5.95 kg of the sugar. How many kg of sugar remain?

4. During a dry year, Paghman had only 44.96 cms in of rain. The next year it had 69.86 cms of rain. Find the difference in rainfall between the two year?

Objective: Subtract decimals with rounding.

Study

Before subtracting decimals, we can round off.

Round off the decimal to the nearest tenth and subtract.

$$\begin{aligned} &6.75 - 3.69 \\ \rightarrow &6.8 - 3.7 \end{aligned}$$

$$\begin{array}{r} 6 . 8 \\ - 3 . 7 \\ \hline 3 . 1 \end{array}$$

The answer is 3.1

Subtract and round off the answer to the nearest whole number.

$$4.95 - 3.826$$

$$\begin{array}{r} 4 . 9 \overset{4}{\cancel{5}} \overset{10}{\cancel{0}} \\ - 3 . 8 2 6 \\ \hline 1 . 1 2 4 \end{array}$$

The answer is 1.124

After rounding off to the nearest whole number
answer is 1

Practice

1. Round off the decimals to the nearest tenth.

Example: $7.25 - 3.16$

$$\rightarrow 7.3 - 3.2$$

The answer is 4.1

$$\begin{array}{r} 7 . 3 \\ - 3 . 2 \\ \hline 4 . 1 \end{array}$$

- $19.25 - 12.79$
- $20.37 - 10.29$
- $35.980 - 15.87$
- $14.08 - 7.59$

2. Solve and round the answer to a whole number.

- a. Sadiq bought 5.65 kg cake from the bazaar and Ashraf bought 2.75 kg cake, how many kg cake Sadiq has bought more than Ashraf?
- b. There are notebooks and pens in a box, the total weight of notebooks and pens is 78.425kg. If the weight of notebooks is 70.975kg find the weight of pens

Objective: Review of decimals (addition & subtraction).

1. Add or subtract.

Example: $581.6 + 119.53$

$$\begin{array}{r}
 \textcircled{1} \quad \textcircled{1} \quad \textcircled{1} \\
 5 \quad 8 \quad 1 \quad . \quad 6 \quad 0 \\
 + \quad 1 \quad 1 \quad 9 \quad . \quad 5 \quad 2 \\
 \hline
 7 \quad 0 \quad 1 \quad . \quad 1 \quad 2
 \end{array}$$

- a. $348.5 + 22.08 + 7$
- b. $634.75 - 353.25$
- c. $945.37 - 325.20$
- d. $83.25 + 78.237 + 23.32$

2. Complete the problems.

Example: $\boxed{9111} - 775.89 = 8335.11$

- a. $912.053 - \boxed{} = 723.253$
- b. $\boxed{} - 5592.5 = 407.5$
- c. $75 + 8.86 + \boxed{} = 407.5$
- d. $28.28 + \boxed{} + 75.9 = 707.18$

3. Solve and round off the answer to the nearest whole.

Example: $581.65 + 119.5$

$$\begin{array}{r}
 \textcircled{1} \quad \textcircled{1} \quad \textcircled{1} \\
 5 \quad \cancel{8} \quad 1 \quad . \quad 6 \quad 5 \\
 + \quad 1 \quad 1 \quad 9 \quad . \quad 5 \quad 0 \\
 \hline
 7 \quad 0 \quad 1 \quad . \quad 1 \quad 5
 \end{array}$$

- a. $304.18 - 164.34$
- b. $62.495 + 7.381 + 2.15$
- c. $400.15 - 195.45$
- d. $46.930 + 460.933 + 64.093$

4. A wood bar is 5.213 meters long. A carpenter cuts 2.351 meter of the wood bar to make a shelf. How long is the wood bar has now?
5. Razia had 525.75 Afg. She spent Afg 311.215 then her father gave her Afg. 412.27. How much money does Razia have now?

Objective: Assessment of addition and subtraction of decimals.

1. Round off the following number to the nearest tenth.
 - a. 63.58
 - b. 95.07
 - c. 63.18
 - d. 55.95
2. Round off the following numbers to the nearest whole numbers.
 - a. 654.39
 - b. 732.54
 - c. 79.30
 - d. 36.58
3. Write missing numbers to complete the problem.
 - a. + 2.75 + 29.2 = 35.45
 - b. 627.75 - = 0.23
 - c. - 3.57 = 4.43
 - d. 23.512 + = 46.722
4. Zakia has to weave a carpet 5.35 meter long. She has woven 2.538 meter of the carpet. How much of the carpet remains to be woven? Round off the answer to the nearest hundredths.
5. There was 3.5 kg edible oil in a box. 2.55 kg of this oil was consumed. 1.75 kg oil was added to this box. Now how much oil is in the box?

Objective: Multiply decimals with whole numbers

Study

To multiply decimals with a whole number, we multiply them as whole numbers. Then we count the number of decimal places after the decimal point in the two numbers.

Then we put the same number of decimal places in the answer. We count from right to left to add the places.

$$\begin{array}{r} 4.116 \leftarrow 3 \text{ decimal places} \\ \times \quad 3 \leftarrow + 0 \text{ decimal places} \\ \hline 12.348 \quad 3 \text{ decimal places.} \end{array}$$

$$\begin{array}{r} 417.6 \leftarrow 1 \text{ decimal place} \\ \times \quad 8 \leftarrow + 0 \text{ decimal places.} \\ \hline 3326.8 \quad 1 \text{ decimal places} \end{array}$$

Practice

1. What is the product? Write **A** or **B**.

Example: $3.94 \times 6 =$ A. 23.64 B. 236.4

$$\begin{array}{r} 3.94 \\ + \quad 6 \\ \hline 23.64 \end{array}$$

- | | | |
|----------------------|-----------|-----------|
| a. 23.86×12 | A. 2.8632 | B. 286.32 |
| b. 8.09×14 | A. 113.26 | B. 11.326 |
| c. 5.25×15 | A. 787.5 | B. 78.75 |
| d. 106.5×8 | A. 852.0 | B. 8.520 |

- If one notebook is priced at Afg 6225.67, find the price of 85 notebooks.
- There are 52 boxes of tea on a store shelf. If each box contains 0.45 kg, find the total amount of kg of tea on the store shelf.
- Ahmad purchased 52 apricot sapling trees from a farm. He paid Afg 25125.17 for each sapling tree. How much did Ahmad pay for all the sapling trees?

Objective: Multiply decimal with decimals.

Study

Look at the example.

$$2.3 \times 0.6$$

To multiply a decimal with a decimal we first multiply them as whole numbers. Then we count the number of decimal places after the decimal point and put them in the answer. Remember to add decimal places from the right hand side.

$$\begin{array}{r} \text{A. } 2.3 \longleftarrow 1 \text{ decimal place} \\ 0.6 \longleftarrow + 1 \text{ decimal place} \\ \times 1.38 \longleftarrow 2 \text{ decimal places} \\ \hline \end{array}$$

$$\begin{array}{r} \text{B. } 1.32 \times 0.87 \quad \begin{array}{l} 1.32 \longleftarrow 2 \text{ decimal places} \\ \times 0.87 \longleftarrow + 2 \text{ decimal places} \\ \hline 924 \\ + 10560 \\ \hline 1.1484 \end{array} \quad \begin{array}{l} 4 \text{ decimal places} \end{array} \end{array}$$

Practice

1. Multiply.

$$\begin{array}{r} \text{Example: } 0.007 \times 0.5 \quad \begin{array}{r} 0.007 \\ \times 0.5 \\ \hline 0.0035 \end{array} \quad \begin{array}{l} 3 \text{ decimal places} \\ + 1 \text{ decimal place} \\ \hline 4 \text{ decimal places} \end{array} \end{array}$$

a. 5.24×0.25 c. 5.345×1.24

b. 3.42×1.21 d. 12.534×2.15

2. What is the product when 0.016 is multiplied by 0.025?

3. Find the product of the factors 3.87 and 19.605?

4. What is the product of 0.12 and 25.45?

5. To extend a telephone connection to the main office, an NGO needs 87.547 meters of wire. If the price of each meter of wire is 250.05 Afg, find the total cost of wire.

6. Find the total cost of all items then round of to the nearest tenth.

No	Item	Quantity (kg)	Rate Afg	Total Cost
1	Bread	2.75	3250.07	
2	Biscuit	4.07	2872.25	
3	Chocolate	6.96	1512.75	
4	Cake	2.820	1176.002	

Objective: Identify place value upto Trillions.

Study

trillion	billions			millions			thousands			ones		
trillion	100 billions	10 billions	billions	100 millions	10 millions	millions	100 thousands	10 thousands	thousands	100 hundreds	tens	ones
9	5	3	7	4	3	7	9	7	8	0	4	6

9,537,437,978,046

Practice

1. Write the place value of the circled numbers.

Example: 3(4)5 6 7 8 4 5 6 7020, 400,000,000,000

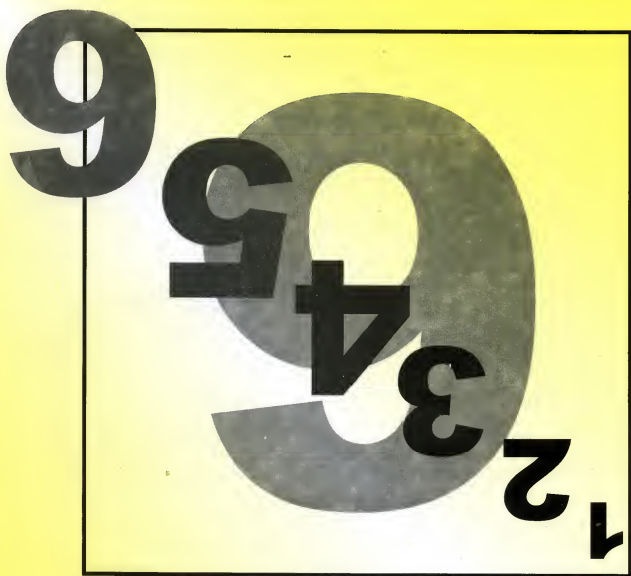
- a. 2(7)8 ,527,856,423 _____
- b. (8),548,656,798,492 _____
- c. 9,8(3)4,597,493,450 _____

2. Write numbers that match these to expanded form.

Example: $8,000,000,000 + 50,000,000 + 700,000 + 30,000 + 500 = \underline{8,050,730,500}$

- a. $500,000,000 + 300,000 + 80,000 + 600 + 2 = \underline{\hspace{2cm}}$
- b. $3,000,000,000 + 400,000,000 + 70,000,000 + 6,000,000 = \underline{\hspace{2cm}}$

Grade Six



Mathematics

for

Supplementary Materials

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



In the name of God, the gracious, the merciful

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AGBASEd	Afghan German Basic Education
AIL	Afghan Institute of Learning
CARE - International	
CIC	Children in Crisis
GTZ-BEFARe	Basic Education for Afghan Refugees
IRC	International Rescue Committee
NAC	Norwegian Afghanistan Committee
OI	Ockenden International
QCS	Quetta City Schools
SAB	Solidarite Afghanistan Belgium
SC/US	Save the Children Federation — USA
SCA	Swedish Committee for Afghanistan
SEIAL	Sanayee Institute of Education and Learning
UNOCHA	



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